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Report of the Proceedings.

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REPORT OF PROCEEDINGS

OF THE

MASTER CAR BUILDERS'  
ASSOCIATION.

— 1891 —



# REPORT OF THE PROCEEDINGS

OF THE

TWENTY-FIFTH ANNUAL CONVENTION

OF THE

# MASTER CAR-BUILDERS' ASSOCIATION

HELD AT

CAPE MAY, NEW JERSEY,

JUNE 9, 10 AND 11,

1891.

CHICAGO, ILL.:

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1891.



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MASTER CAR-BUILDERS' ASSOCIATION

HELD AT  
CAPE MAY, NEW JERSEY,  
JUNE 9TH, 10TH AND 11TH, 1891.

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The Convention was called to order at 10:15 A.M., on January 9, in the ball-room of the Stockton Hotel, by the President, Mr. John Kirby.

THE PRESIDENT: I understand that the citizens of Cape May desire to welcome us here through their representative, the mayor; I have, therefore, the pleasure of introducing to you Mayor Edmunds, of Cape May City.

MAYOR EDMUNDS: Ladies and Gentlemen of the Master Car-Builders' Association: I take pleasure in welcoming you to the City of Cape May. It is a great pleasure to have you here, and one which we appreciate very much. I sincerely hope that your visit may be pleasant and profitable. (Applause.)

THE PRESIDENT: I presume you all have the programme of the business this morning, and the first order of business is the calling of the roll.

The Secretary called the roll. The following members were present:

Adams, F. D.	Davis, John H.	Kittredge, A. M.	Stinard, F. A.
Agnew, J. H.	Day, W. H.	Leeds, Pulaski.	Stone, W. A.
Anderson, T.	Demarest, G. W.	Leighton, J. T.	Sutherland, T.
Baker, D. H.	Divine, J. F.	Lentz, J. S.	Townsend, Joseph.
Barr, J. N.	Dolbeer, A.	Lewis, W. H.	Trainham, W. H.
Barber, J. C.	Downing, T.	Lindsay, Thomas.	Turner, L. H.
Biester, R.	Duncan, T. G.	McCarty, H. C.	Turreff, William.
Bissell, T. A.	Ensign, S. P.	McKenna, R.	Voorhees, John.
Blackall, R. C.	Fletcher, J. B.	McWood, William.	Waitt, A. M.
Blackwell, Charles.	Forsyth, William.	Macbeth, James.	Walker, C. W.
Bossinger, H. C.	Garrett, M. A.	Mackenzie, John.	Walker, R.
Bossinger, J. J.	Garstang, William.	Maglenn, J.	Wall, E. B.
Boutet, H.	Gibbs, George.	Marshall, R. E.	Wallis, J. M.
Bradley, O.	Grieves, E. W.	Martin, M. M.	Webster, H. A.
Bronner, E. D.	Griffith, F. B.	Meehan, J.	Welch, Benjamin.
Bushnell, R. W.	Griggs, A.	Millen, Thomas.	West, G. W.
Butler, C. J.	Groves, J. R.	Nelson, E. D.	White, David.
Brimson, W. G.	Hackett, George.	Paxson, L. B.	Wilbur, R. H.
Carlton, E. T.	Harding, B. R.	Payne, G. C.	Williams, E. A.
Carr, W. K.	Harris, G. H.	Peck, P. H.	Wood, J. E.
Carson, M. T.	Harrison, W. H.	Porcher, S.	Pullman, C. L.
Casanave, F. D.	Hawksworth, D.	Rankin, J. H.	Soule, R. H.
Chamberlain, E.	Hennessey, J. J.	Rhodes, G. W.	Sullivan, J. J.
Chamberlain, J. T.	Hitchcock, R.	Robertson, W. J.	Hayes, R. T.
Charpiot, S. A.	Hodge, J.	Rogers, M. J.	Michael, J. B.
Clark, I. W.	Hoffecker, W. L.	Rutherford, Wm.	Mills, Stot.
Connolly, J. J.	Holt, J. M.	Schroyer, C. A.	Ryan, J. J.
Cook, J. S.	Irvine, S.	Silvius, E. T.	Glover, J. B., Jr.
Cormack, William.	Jackson, A. A.	Sinclair, A.	Lungren, W. H.
Cory, C. H.	Johann, Jacob.	Skinner, J. R.	Coulter, H.
Cowan, John.	Keith, Isaac.	Smith, C. A.	
Cromwell, A. J.	Kirby, John.	Smith, W. T.	

THE PRESIDENT: The next order of business is the reading of the minutes of the last meeting, but as they have been printed you may, perhaps, dispense with that.

MR. MACKENZIE: I move that the reading of the minutes be dispensed with.

The motion was carried.

The president then read the following address:

*Gentlemen of the Convention:*

I meet you on the morning of the twenty-fifth annual meeting of this Association with a cordial greeting; it gives me great pleasure to see so many of you at this time. Being more familiar with the construction of a car than with the rules of rhetoric, I shall not attempt to try your patience with a long address, but I cannot refrain from

expressing to you my high appreciation of the honor conferred upon me by your unanimous vote at the last convention. I bespeak your considerate patience, and ask you to render me all the assistance possible to make this convention one of added wisdom to ourselves and a benefit to the railroad companies in whose behalf we are here assembled.

Committees have been appointed to investigate different subjects and report to this convention; they will present to you some valuable information, and I trust that their reports will be received in a spirit of inquiry, and that all present will join freely and fairly in the discussions, to the end that, when this convention shall have completed its work, each one adding his mite, we all may feel that we have been benefited by coming together.

And now, we will devote a few minutes to the coupler question. The great diversity of design of the Master Car-Builders' type of coupler coming into use since the vertical type of freight car coupler has been adopted as the standard of this Association engenders a great deal of trouble. The fertile brain of the inventor has been unceasingly at work, and the result has been a multiplicity of kinds, until we have from twenty to twenty-five different patterns—and still increasing—all posing as standard couplers; and yet the knuckle, that portion of the coupler most likely to require renewing, is not interchangeable with any of the other designs. Then there are the uncoupling devices, differing each one from the other, and as diverse as the couplers themselves. This multiplicity of design is tending in the wrong direction; and, in view of past experience, I venture to recommend that this convention, before adjourning, appoint a committee of five of its members to consider the best course to pursue in restricting the use of the Master Car-Builders' coupler to not more than five different kinds, and also to the end that the uncoupling device shall be as nearly uniform as possible. It is unnecessary for me to enlarge upon this subject, as you must all know, from every-day experience, the inconvenience caused by the difference in the construction of the many vertical types of couplers now extant. It has been said to me by parties who voted for the adoption of the vertical type of freight-car coupler that they had two objects in view in so doing. One was additional safety to the men who make up and man the freight trains; the other was a great reduction in variety of drawbars in use; imagine the disappointment.

The next thing that I desire to call your attention to is the excessive use of the defect card by some roads. When it becomes necessary to utilize the space on two cards to enumerate the defects existing on one car, it is time that car was repaired. It is a common thing for the company I represent to repair more than four hundred cars in one month on cards, which would appear to indicate an abuse of the card system by somebody, and which has a tendency to encourage the loading of bad-order cars for somebody else to repair.

I have been requested by the clerks in the car department of the Lake Shore & Michigan Southern Railway Company to bring to the attention of this convention the inconvenience experienced by the use of the old size of defect cards; how inconvenient they are to fold and file away. It is now about four years since the new and more convenient size ( $3\frac{1}{2}$  by 8 inches) of card was adopted, and yet some railroad companies are using the old size cards today ( $4\frac{1}{2}$  by  $6\frac{1}{2}$  inches). While on this subject of defect cards, I desire to call your attention to the reprehensible

practice of some inspectors of adding defects to the face side of a card which did not exist on the car when the card was first applied; this is nothing less than forgery, and if there is any man within the sound of my voice this morning who has been guilty of this thing, I beg of him to repent and resolve to do so no more. It is by acting out the precepts laid down in the golden rule that lightens each other's burdens.

#### THE RULES OF INTERCHANGE AND ARBITRATION COMMITTEE.

In our every-day experience in the interchange of cars we realize the benefit of the rules governing that interchange. It is a wise provision of this Association that one session of the convention each year shall be given to a review of these rules. In this connection, the query presents itself to me, if it is not possible for nearly all of the matters pertaining to the interchange business to be settled by the parties interested, and thus obviate the necessity of calling the services of the Arbitration Committee into requisition. The committee's work is becoming somewhat burdensome, and, as I view it, unnecessarily so. During the past year they have given decisions on forty-one cases which were submitted to arbitration. These decisions were based on the Rules of Interchange—which you all have in your possession. From personal observation of the questions decided by the Arbitration Committee during the last year it appears to me that nearly all of them should have been decided by the parties interested. I trust that I shall never see a member of this Association displaying a disposition to place the responsibility, which rightfully belongs to him, upon the shoulders of others. In a spirit of kindly feeling I ask you to consider this matter which I have touched upon.

"Up the broad stairs that value rears, stand motives beckoning earthward,  
To summon men to nobler spheres and lead them worthword."

I shall not take up your time with reminiscence; but, this being the twenty-fifth annual convention of the Master Car-Builders' Association, it will not be out of place for me to refer to that little rivulet which, a quarter of a century ago, started from the surface, and has gone on increasing in volume year by year, until it has assumed the proportions of a river, whose utility is recognized over the length and breadth of this great land by those men of brain and nerve, in whose hands rest the helms of our mighty railroad enterprises. But, with all this expansion and growth, labor grows with it, and our work is not all done. We have not arrived at that period when everything has been thought out and nothing new can be suggested, invented or discovered. From observation and experience I feel safe in asserting that there never has been a time in the history of railroading when so much was expected of a man as at present; there is no standing still, it must be either progression or retrogression, but I have no fear of the latter so long as the young men of this Association continue to put their shoulders to the wheel. We must, however, proceed with caution, and in our zeal for making progress we should not lose sight of the fact that every change made in car construction (and the desire of nearly every man is to have something different from his neighbor) increases the difficulty of making repairs; it frequently happens that crippled cars are held for three or four weeks at our shops awaiting the arrival of material which it was necessary to order from the owners of the cars. This would indicate that the term "M. C. B. Standard" was a misnomer.

By way of example, I beg to refer you to the Christie brake head ; while the adoption of that form of head was made with a view to simplify parts, I venture the assertion that since the adoption of the Christie brake head as the standard of this Association, the difficulty of making repairs to freight cars has increased. While the shoes may be interchangeable, the brake heads are far from being so ; this is caused by the use of different beams, or a different manner of hanging. The same thing is true of the oil box for 60,000 pounds capacity freight cars ; the distance between centers of bolt holes varies by quarters from 8 to 9½ inches. This is not progression.

It is gratifying to see the progress which is being made in equipping freight cars with automatic brakes and couplers ; may the good work still go on.

The secretary, Mr. Cloud, has improved upon ancient custom, and put each member in possession of reports of the committees two weeks in advance of the convention, thereby enabling the members to come prepared to intelligently enter into the discussions. This, I think, will be appreciated.

Almost upon the threshold of our annual convention day, on June 2, death has taken from our number one who has filled the offices of president, vice-president and treasurer, Mr. V. K. Verbyck. A committee should be appointed to prepare a suitable memoir of his life and work with us.

Gentlemen, I thank you for your kind attention, and I sincerely trust that the deliberations in which we are about to engage may be

" With wisdom fraught,  
Not such as books, but such as practice taught."

THE PRESIDENT : The business next in order is the admission of new members.

MR. CLOUD : I would like to say in this connection that there are slips here for application for active membership in this Association. On the back of the slip is printed an extract from the Constitution, showing what is necessary to be eligible as an active member. Any parties who wish to join the Association as active members can get one of these slips at any time and look it over and see if they are eligible, and if so, fill it out, sign it and return it to this desk, which will be all that is necessary to constitute an application. Then, if I am not sure that they are eligible, I will take it up with them by correspondence afterwards, unless I see them here personally. Such parties can get the slips either here during the convention or in the office of the Executive Committee in Parlor D, during the next two or three days, so that they will have plenty of time.

THE PRESIDENT : The business next in order is the report of the Secretary and Treasurer.

The Secretary submitted the following report :

## SECRETARY'S REPORT.

The report of the proceedings of the Twenty-fourth Annual Convention, held in 1890, showed a total membership of 264, as follows :

Active Members.....	156
Representative Members.....	103
Associate Members.....	5
Total.....	264

Since that report was published, 17 new representative members have been appointed, 5 of whom succeeded old representative members, making a total representative membership in the Association of 115.

One representative member has died, and no successor has yet been appointed for the road which he represented, but the road figures in the above totals as having a representative membership.

Three new names of active members have been added to the list of membership, one of the old representative members has reverted to active membership, one active member has resigned and one active member has died, which makes the total of active members at this time 158.

There has been no change in the associate membership.

The membership is, therefore as follows :

Active Members.....	158
Representative Members.....	115
Associate Members.....	5
Total.....	278

The number of cars represented at the time the report of the last Convention was published, was 918,861; the revised returns for this year show at the present time 982,970 cars, of which 8,240 cars are represented by appointments from new railroad companies, and the balance by the old representative membership.

Revised returns have been received from nearly all the railroads represented in the Association, but a few have not reported any revisions for this year.

The cash collected by the Secretary since the last report, and up to the date of this report, June 3, 1891, may be summarized as follows :

To Dues collected from members.....	\$5,526.00
“ Sale of Rules of Interchange.....	555.87
“ Sale of Reports of Proceedings.....	196.43
“ Sale of Prints from Electros.....	7.25
“ Sale of Electros.....	10.00
“ Interest allowed on monthly balances to June 3, 1891.....	18.23
Total receipts.....	\$6,313.78

The Disbursements during the same period are as follows :

By Paid Expressage.....	\$ 8.00
" " Electrotyping and Engraving.....	289.45
" " Exchange.....	16.95
" " Stationery.....	11.60
" " Moving to Chicago.....	50.75
" " R. W. Ryan, reporting convention, 1890.....	134.87
" " Drawing Brake-head and Shoe.....	21.20
" " Refund of Overpayment, C. R. I. & P. R'y.....	11.05
" " Blue Prints.....	54
" " Postage and Stamped Envelopes.....	148 96
" " Telegrams.....	18.04
" " Printing Letter Ballots.....	87.25
" " " Rules of Interchange.....	254.00
" " " Annual Reports.....	900.05
" " " Miscellaneous.....	572.95
" " " Rent of Rooms for Executive and Arbitration Committee meetings in New York.....	15.00
" " " Secretary's Salary, May 1, 1890, to June 1, 1891, including office rent and clerk.....	3,125.00
" Balance remitted to G. W. Demarest, Treasurer.....	648.12
Total Disbursements.....	<u>\$6,313.78</u>

From the above it will be seen that there is no money in the hands of the Secretary, and the Association has no unpaid indebtedness now due, as the printing, electrotyping, etc., preparatory to this convention have all been paid.

The expenses of the Association for the year are greater than last year on account of increased work to be paid for, and on account of higher rates for printing, etc., in Chicago than in Buffalo.

The arrears of unpaid dues aggregate \$575.00, and statement showing the names of members in arrears and amount owing by each will be posted for inspection.

The details of dues collected from members will be found in the subjoined statement.

JNO. W. CLOUD,  
*Secretary.*

#### DETAILS OF DUES COLLECTED FROM MEMBERS.

1890		
June 10	W. K. Carr.....	\$ 5.00
" 10	J. S. Cook.....	10.00
" 10	John Cowan.....	5.00
" 10	J. H. Davis.....	5.00
" 10	W. H. Day.....	5.00
" 10	G. W. Demarest.....	5.00
	Carried forward.....	<u>\$ 35.00</u>



		<i>Brought forward</i> .....	\$ 35.00
June	10	C. P. Dryden.....	10.00
"	10	F. G. Duncan.....	5.00
"	10	S. P. Ensign.....	10.00
"	10	J. B. Fletcher.....	5.00
"	10	E. Geffcken.....	5.00
"	10	W. H. Harrison.....	10.00
"	10	John Hodge.....	5.00
"	10	S. Irwin.....	5.00
"	10	A. M. Kittredge.....	5.00
"	10	H. C. McCarthy.....	5.00
"	10	R. McKenna.....	5.00
"	10	William McWood.....	5.00
"	10	Thomas Millen.....	10.00
"	10	J. O. Pattee.....	5.00
"	10	G. C. Payne.....	5.00
"	10	J. H. Rankin.....	5.00
"	10	W. A. Short.....	5.00
"	10	J. R. Skinner.....	5.00
"	10	A. G. Steinbrenner.....	5.00
"	10	F. A. Stinard.....	5.00
"	10	W. A. Stone.....	10.00
"	10	John Voorhees.....	5.00
"	10	Benjamin Welch.....	70.00
"	10	F. M. Wilder.....	10.00
"	10	W. L. Hoffecker.....	5.00
"	10	A. M. Waitt.....	5.00
"	10	J. H. Agnew.....	5.00
"	10	J. J. Hennessey.....	5.00
"	10	A. J. Cromwell.....	5.00
"	10	J. M. Holt.....	5.00
"	10	E. T. Carlton.....	5.00
"	10	Thomas Lindsay.....	5.00
"	10	J. E. Wood.....	5.00
"	10	H. J. Small.....	5.00
"	10	H. C. Bossinger.....	5.00
"	10	C. H. Howard.....	10.00
"	10	J. W. Clark.....	5.00
"	10	C. W. Walker.....	5.00
"	10	James Maglenn.....	5.00
"	10	M. A. Garrett.....	5.00
"	16	C. E. Garey.....	5.00
"	16	John Sweeney.....	5.00
"	16	James A. Davis.....	10.00
"	16	John Higginson.....	70.00
		<i>Carried forward</i> .....	\$ 425.00

		<i>Brought forward</i> .....	\$ 425.00
July	3	S. S. Smith.....	10.00
"	10	W. D. Minton.....	5.00
"	10	L. D. Kneeland.....	5.00
"	11	J. H. Raymond.....	5.00
"	11	R. Hitchcock.....	5.00
"	12	G. W. Lilley.....	5.00
"	14	F. J. Hecker.....	5.00
"	14	C. A. Smith.....	5.00
"	14	Samuel Porcher.....	5.00
"	16	George F. Gage.....	5.00
"	16	Job H. Jackson.....	5.00
"	16	I. N. Keith.....	5.00
"	17	W. J. Richardson.....	5.00
"	17	W. T. Hildrup.....	5.00
"	17	R. D. Wade.....	50.00
"	17	C. H. Dickerman.....	5.00
"	17	C. F. Ward.....	5.00
"	17	John F. Divine.....	5.00
"	18	J. T. Gause.....	5.00
"	19	Angus Sinclair.....	5.00
"	19	F. P. Boatman.....	20.00
"	19	Charles Graham.....	5.00
"	19	L. H. Turner.....	25.00
"	21	R. H. Wilbur.....	170.00
"	21	C. W. Davenport.....	5.00
"	22	James McGee.....	15.00
"	23	Robert McKenna.....	140.00
"	23	E. S. Marshall.....	25.00
"	23	G. W. Rhodes.....	20.00
"	23	John Mackenzie.....	40.00
"	23	M. M. Martin.....	75.00
"	23	C. A. Schroyer.....	130.00
"	24	C. M. Leonard.....	5.00
"	25	Rudolph Biester.....	5.00
"	25	W. S. Morris.....	25.00
"	25	J. O. Pattee.....	40.00
"	26	H. Schlacks.....	5.00
"	26	W. H. Trainham.....	5.00
"	26	T. A. Bissell.....	5.00
"	28	E. D. Bronner.....	70.00
"	28	B. R. Harding.....	5.00
"	29	William Turreff.....	90.00
"	30	T. L. Chapman.....	35.00
"	31	F. Johnson.....	5.00
		<i>Carried forward</i> .....	\$ 1,540.00

		<i>Brought forward</i> .....	\$ 1,540.00
Aug.	1	C. J. Butler.....	20.00
"	2	D. Hawksworth.....	40.00
"	2	W. T. Small.....	85.00
"	2	George T. Anderson.....	5.00
"	2	C. H. Zehnder.....	5.00
"	4	William Apps.....	10.00
"	4	George Rommel.....	5.00
"	4	William Buchanan.....	220.00
"	4	George Gibbs.....	5.00
"	4	H. A. Whitney.....	35.00
"	4	F. D. Adams.....	35.00
"	6	Jacob Johann.....	5.00
"	6	James Meehan.....	50.00
"	6	John Kirby.....	95.00
"	6	R. C. Blackall.....	70.00
"	6	J. L. Wagner.....	5.00
"	7	David W. Hunter.....	5.00
"	7	H. L. Preston.....	45.00
"	7	F. D. Casanave.....	170.00
"	8	T. A. Fraser.....	5.00
"	8	A. A. Jackson.....	25.00
"	8	E. T. Silvius.....	5.00
"	11	Herbert Wallis.....	105.00
"	12	John Richardson.....	5.00
"	13	M. N. Forney.....	5.00
"	13	K. W. Blackwell.....	5.00
"	13	H. Middleton.....	110.00
"	13	J. N. Barr.....	135.00
"	13	W. B. Snow.....	70.00
"	14	A. T. Whitehouse.....	5.00
"	14	William Forsyth.....	100.00
"	14	J. T. Chamberlain.....	50.00
"	15	W. H. Lewis.....	20.00
"	15	G. H. Gramling.....	5.00
"	18	J. M. Wallis.....	325.00
"	18	J. L. Greatsinger.....	10.00
"	18	J. N. Lauder.....	20.00
"	18	L. B. Paxson.....	120.00
"	18	R. E. Marshall.....	5.00
"	18	W. A. Foster.....	5.00
"	19	David White.....	5.00
"	19	E. Richardson.....	10.00
"	20	Thomas Tyrrell.....	5.00
"	20	Sanford Keeler.....	20.00
		<i>Carried forward</i> .....	\$ 3,625.00

		<i>Brought forward</i> .....	\$ 3,625.00
Aug.	21	T. A. Fraser.....	15.00
"	21	J. R. Reniff.....	5.00
"	21	E. W. M. Hughes.....	5.00
"	21	William Voss.....	5.00
"	22	Allen Vail.....	5.00
"	23	Pulaski Leeds.....	85.00
"	23	G. W. Miller.....	5.00
"	23	J. S. Lentz.....	5.00
"	25	John Coghlan.....	5.00
"	26	W. P. Siddons.....	15.00
"	26	J. C. Barber.....	5.00
"	27	S. B. Haupt.....	50.00
"	27	James McGregor.....	5.00
"	27	Joseph Taylor.....	5.00
"	27	G. I. Davison.....	5.00
"	29	Ross Kells.....	210.00
"	29	A. Dolbeer.....	30.00
"	29	LaMott Ames.....	10.00
"	29	J. S. McCrum.....	45.00
"	29	J. W. Marden.....	30.00
"	30	L. J. Cox.....	5.00
"	30	H. Boutet.....	5.00
"	30	J. J. Henry.....	10.00
"	30	E. B. Wall.....	60.00
Sept.	1	Joseph Townsend.....	45.00
"	3	W. T. Smith.....	10.00
"	5	J. J. Connolly.....	25.00
"	5	J. R. Groves.....	30.00
"	5	M. L. Carson.....	15.00
"	6	William Cormack.....	30.00
"	10	W. L. Hoffecker.....	110.00
"	10	Nathan Wright.....	5.00
"	13	James Macbeth.....	5.00
"	15	George W. West.....	20.00
"	16	Robert Miller.....	5.00
"	17	W. Augustus.....	5.00
"	19	E. W. Grieves.....	140.00
"	22	C. H. Cory.....	30.00
"	24	E. A. Williams.....	5.00
"	24	Thomas Anderson.....	35.00
"	27	James Denver.....	5.00
Oct.	1	R. Biester.....	5.00
"	3	James R. Cade.....	11.00
"	3	Allen Vail.....	35.00
		<i>Carried forward</i> .....	\$ 4,821.00

		<i>Brought forward</i> .....	\$4,821.00
Oct.	8	Charles Kenison.....	10.00
"	8	W. H. Thomas.....	55.00
"	18	John Bean.....	5.00
"	20	Henry Ryder.....	10.00
"	21	William M. Morse.....	5.00
"	21	T. Sutherland.....	5.00
"	27	Caspar Wicke.....	5.00
"	28	Clem. Hackney.....	5.00
"	29	H. S. Huidekoper.....	5.00
Nov.	12	Charles Coller.....	25.00
"	12	J. J. Casey.....	5.00
"	18	Charles Blackwell.....	5.00
"	20	H. Roberts.....	30.00
"	24	John Player.....	25.00
"	26	George H. Haselton.....	15.00
"	28	W. C. Ennis.....	15.00
"	28	John Player.....	100.00
Dec.	3	O. P. Dunbar.....	20.00
"	5	R. W. Bushnell.....	25.00
"	6	William Garstang.....	60.00
"	22	George Hackett.....	5.00
1891.			
Jan.	13	E. P. Sheerer.....	5.00
"	23	B. K. Verbyck.....	75.00
"	26	L. Packard.....	5.00
"	26	J. E. Doran.....	5.00
Feb.	2	N. W. Sample.....	35.00
"	19	L. Finlay.....	5.00
Mar.	2	E. T. Silvius.....	5.00
"	2	J. W. Baker.....	10.00
April	1	T. B. Stewart.....	5.00
"	27	J. H. Setchel.....	5.00
May.	8	S. A. Crone.....	5.00
"	21	H. A. Webster.....	10.00
"	21	J. Sweeney.....	5.00
"	29	J. H. O'Brien.....	10.00
June	1	J. N. Mileham.....	5.00
"	1	Rudolph Biester.....	5.00
"	1	Benjamin Welch.....	70.00
"	1	H. J. Small.....	5.00
		Total.....	\$5,526.00

On motion the report was received.

The following report was submitted by the Treasurer:

## TREASURER'S REPORT.

*To the President and Members of the Master Car-Builders' Association :*

Received of John Kirby, former Treasurer, June 12 and -25, 1890.....	\$1,960. 29
Interest on same to May 19, 1891.....	35 93
Received of John W. Cloud, Secretary, June 5, 1891.....	648. 12
Total in hand to date.....	<u>\$2,644. 34</u>

G. W. DEMAREST,

*Treasurer.*

On motion the report was received.

THE PRESIDENT: The next order of business is the assessment of annual dues. The Executive Committee in session yesterday decided to recommend that the annual dues be fixed as heretofore, namely, \$5 per vote. I suppose it will be necessary for the convention to take some action upon that, and if it is your pleasure a motion is in order to fix that amount.

On motion the recommendation of the Executive Committee was adopted.

MR. MACKENZIE: What are the active membership dues?

THE PRESIDENT: It is all the same — \$5 per vote. The annual dues for the coming year will be \$5 per vote.

THE PRESIDENT: It is customary to have a recess of ten minutes to receive dues and for the admission of new members. If that is your pleasure now, we will do so.

MR. CLOUD: I would like to say in this connection that if any of the members present prefer to pay their dues at this time I will receive the money and put it down to their credit on the list which I have here, and mail them receipts on my return to the office, on account of the saving of time; but it is just as satisfactory to me, as far as that goes, if they wait until they receive bills, provided they send me the money without any cost for collection.

On motion of Mr. Day a recess of ten minutes was taken.

THE PRESIDENT: The business next in order is the appointment of a committee to nominate officers for the ensuing year. I will name on that committee William F. Turreff, Rollin H. Wilbur, Benjamin Welch, William McWood and E. B. Wall.

The next order of business will be appointing a committee on subjects, to report on Thursday morning. I will name for that committee F. D. Adams, E. Chamberlain, J. N. Barr, William Forsyth

and John Mackenzie. That committee will report subjects to be considered for 1892.

Next will be the appointment of a committee on correspondence and resolutions, to report to this convention before its close. I will name on that committee W. H. Day and Thomas Sutherland.

Next in order will be the election of an Auditing Committee, to examine the Secretary's and Treasurer's accounts.

MR. CLOUD: The Constitution provides that this committee shall be elected the same as officers of the Association, and shall consist of three members not officers of the Association.

Messrs. E. D. Bronner, E. D. Nelson and Godfrey W. Rhodes were nominated as members of the Auditing Committee, and on motion of Mr. Casanave the Secretary cast the ballot of the Association for them.

THE PRESIDENT: The next business in order is unfinished business.

MR. CLOUD: Under the head of unfinished business, it will be proper for you to take into consideration the nominations made last year for associate membership. Mr. H. C. Prout was nominated, the recommendation being signed by Messrs. Wall, Forsyth and Rhodes. Mr. D. L. Barnes was nominated also, and the recommendation signed by Messrs. Schroyer, Townsend and Adams. It is proper that action should be taken on these matters at the present time.

MR. WAITT: I move that Messrs. Prout and Barnes be elected as associate members of this Association.

The motion was carried.

MR. CLOUD: I might say that there was a committee appointed last year to confer with a similar committee from the Master Mechanics' Association on the place of meeting. I do not know whether you would like to take that up under the head of unfinished business or not. It would properly come in here, I think.

THE PRESIDENT: Will Mr. Adams, as chairman of that committee, present that report?

MR. ADAMS: I would say that the committees appointed from both the associations met at the Iroquois House in Buffalo and conferred in relation to the subject before them, and it was resolved at that meeting that

We, the joint committee appointed by our respective associations, for the purpose of reducing the time of the meetings, and to better accommodate those who

desire to attend both conventions, recommend a change in the Constitution or By-laws of both and each of the associations, to provide that the Master Car-Builders' Association will meet on the second Wednesday of June, and the American Railway Master Mechanics' Association to meet on the Monday following the second Wednesday of June :

*Resolved*, That the joint committee appointed by our respective associations do recommend a change in the Constitution and By-laws of both and each of the associations, so that each association constitutes a committee of five to jointly fix the place of each annual meeting at least six months before the date of the meeting ; the committee of the Master Mechanics' Association to consist of the president, two vice-presidents, secretary and treasurer ; the committee of the Master Car-Builders' Association to consist of the president, three vice-presidents and secretary.

THE PRESIDENT: Gentlemen, you have heard the report of your committee. What is your pleasure?

MR. DEMAREST: I move that the report be received.

THE PRESIDENT: What will you do with the committee, Mr. Demarest?

MR. DEMAREST: I think they ought not to be discharged until after this is discussed. We might want to continue them.

The motion to receive the report of the committee was carried.

MR. WAITT: In order to bring the matter before the convention for discussion, I would move that the recommendation of the committee be adopted, and that the By-laws of this Association be so amended in accordance with their recommendation.

MR. SCHROYER: I second the motion.

THE PRESIDENT: Gentlemen, you have heard the resolution. What shall we do with it?

MR. ADAMS: It seems to me, Mr. President, that this matter ought not to be hurried too much. I have learned by conversation with some members that there is still some little feeling about the matter, and that it is not acquiesced in fully, and it seems to me that it is quite proper that they should have an opportunity to make their objections, if they have any.

THE PRESIDENT: They will now have an opportunity, Mr. Adams.

MR. ADAMS: I thought that the indication was that the thing was being pushed a little rapidly.

MR. RHODES: I would like to ask, as a matter of information from the committee, why Wednesday was selected. Our meetings usually



occupy about three days, and some of us would like to attend both meetings, but on account of the time that they are spread over we are prevented from doing so. Now, the committee probably have some good reasons, and have, perhaps, considered it, but it would seem to me that Thursday, Friday and Saturday would be better days than Wednesday, Thursday and Friday. That would give Sunday as a day between. Without having fully considered it, I would have preferred Thursday, Friday and Saturday, and Monday, Tuesday and Wednesday.

MR. ADAMS: As one of the committee, I would explain the reasons why we fixed the days as we did. The business of the Master Car-Builders' Association is constantly increasing, and we have always been driven into close quarters to do our business in three days. We thought in discussing this matter that it was better to give Saturday as an extra day in case we needed to use it, and in addition to that, it was thought that some of our members would like a little recreation, and they might want to use the time in that way if it was not occupied by the Association in session. But there are very few who like to attend two sessions a day. There is a good deal of hard work. You get quite tired sitting here three or four or five hours, and it is something of a strain upon a man, and I do not see any reason why we should not occupy a little more time. The committee, I believe, was unanimous in the opinion that it was best to give Saturday as an extra day. The Master Mechanics have as long a time afterward as they choose to spread their sessions over, while the Master Car-Builders' Association, which meets first, would be confined to three days absolutely if we put the commencement of the sessions on Thursday, so we fixed Wednesday as the first day, giving four days if necessary, and if not necessary, the members can enjoy it in pleasure as they prefer. I, myself, personally, should be very much opposed to fixing the time as late as Thursday to commence our session. I think that was the unanimous view of the committee.

MR. SINCLAIR: As one of the joint committee, I would like to mention an argument which was used there that Mr. Adams had omitted. On a considerable number of roads the master car-builder and master mechanic cannot be away at the same time, and when this subject of closing the gap between the meetings was under consideration, a considerable number of persons sent word to members of the committee that it would be very inconvenient to them unless there was some time permitted for the master car-builders to return, and the

master mechanics to go to the place of meeting, and it struck me at the meeting at Buffalo that that argument was used to greater effect than any other in deciding that this Association should meet on Wednesday, and that would give Saturday and Sunday as an interval for the parties to go and the others to come. I think that was, perhaps, a stronger reason than any other for the adoption of the report as it now stands.

MR. CLOUD: Before the question is put, I would like to call attention to the fact that the form in which it is drawn is not suitable for incorporation in the By-laws, and I have just drawn something here which might be satisfactory. If you would like to have it read I will read it.

MR. MACKENZIE: I would like to ask if this resolution, if it is passed, takes effect at once? My understanding was that, as it has laid over one year, if the report is adopted, it would be printed in the By-laws and take effect at once.

MR. CLOUD: It can do so, so far as our Constitution goes. The place of meeting, and all that, is covered by our By-laws, which can be dealt with at this meeting.

MR. MACKENZIE: Was not that the purpose last year, to give this notice so that the Constitution could be changed this year?

MR. CLOUD: We do not need it. We are not changing the Constitution, we are changing the By-laws. If we wanted to change the Constitution, I think we could consider the action last year as a sufficient notice, but we did not need it.

MR. ADAMS: If I understand it, our By-laws embody in them what the Constitution of the Master Mechanics' Association embodies. Their Constitution as I understand it, fixes the time of meeting, while ours is fixed by the By-laws which can be changed at any meeting. If I understand the matter correctly, if we pass this resolution we then surrender the right of the Association as a body to nominate and fix a place of meeting, and we put it into the hands of our officers — the president and three vice-presidents and secretary. We give it to them to say where we shall meet, instead of nominating a place as we have done heretofore. If this is passed, and takes effect at once, it goes into the hands of the officers to fix the place of meeting.

MR. SINCLAIR: Notice was given last year in the Master Mechanics' Association that the Constitution would be changed to coincide with any action that the Association might take.

MR. MACKENZIE : Members do not want to lose sight of the fact that this resolution puts the choosing of the place of meeting in the hands of the Association. They must not think that takes away from them the selection of a point. They can select one or two or three points and the officers will be governed by that.

MR. CLOUD : I have looked through this report very carefully and I do not think that it contemplates the course that Mr. Mackenzie has just announced. As I understand, it is not the intent that any places should be voted on in the convention whatever, but that the whole matter be placed with a committee. That is why I wanted to have you notice that this report of the committee, when it is incorporated into our By-laws, would change Article I to read as follows :

The regular meeting of the Association shall be held annually, on the second Wednesday of June.

It would change Article III by striking out that article and substituting the following :

The place for each annual meeting shall be fixed at least six months before the date for the annual meeting by a committee consisting of the president, three vice-presidents and the secretary acting jointly with a committee of the American Railway Master Mechanics' Association (if such be appointed, to insure both conventions meeting at the same place).

That is the way it would be if you followed the strict recommendation of the committee.

MR. ADAMS : That was the reason, Mr. President, that I hesitated about allowing the thing to be rushed through too quickly. I knew there was some difference of opinion, and I thought the discussion would bring out those points, and I can see that Mr. Mackenzie feels as though we were surrendering some of our rights in the selection of the place of meeting, and so we do ; we place it absolutely in the hands of the officers to fix the place of meeting.

MR. WALL : That doesn't take away, however, from the members of the Association their right to pass a motion at any time recommending that the officers should hold the convention at some certain point, and give them a choice between two or three. I think the officers are a good-looking set of men, and I think they would probably do what we wanted them to do.

MR. SCHROYER : I would offer an amendment, that a committee be appointed to amend the By-laws as they now stand to conform with the recommendations as made by the committee. We, as an Association, want to have something to say as regards where we would like to

hold the meeting, and I think that a committee appointed to revise these By-laws to conform to this recommendation would be the proper thing to have.

MR. MACKENZIE: It seems to me that that motion is simply out of order. Mr. Wall has explained the matter. It doesn't take the right away from the members to choose the place of meeting and to recommend to the officers that they shall meet at a certain place.

MR. CLOUD: I might add to what I said a little while ago that it would be practically impossible for the convention to decide that the following convention should be held at some one of a number of places selected, for, if the Master Mechanics did the same thing, they might select, say, four places west, and this Association might select four places north, but I think that the officers are always glad of suggestions from the members, whether they come in the form of a motion or individually, as to the place of holding the meeting. Certainly the matter will have to be left with a committee wholly, if we are to act with the Master Mechanics' Association.

MR. DAY: It appears to me that if that becomes a law of the Association, it takes it entirely out of the hands of the members of the Association, of this Association particularly, to make any suggestions even, except to a committee, as to where they will meet. It certainly gives the convention no right at all to nominate places for the convention. As far as I am individually concerned, I believe that a board, as has been recommended, would do equally as well as this convention would do; but it certainly takes away some rights that belong to the convention. We all like to say something as to where we would like to go, and I desire to meet that point by inserting that the convention should make suggestions as heretofore, and if it is not thought advisable to take up with the suggestions made by the convention, that it then be left to the committee to decide as to where they should go, leaving it in their hands.

MR. SCHROYER: If you will read Rule 3 over, you will note that it says that twelve places may be proposed. Further on in the rule it states that within six months thereafter the Executive Committee shall select a place from the three places which shall receive the highest number of votes. Now, there is one that requires that the Executive Committee of our Association should select one of the three places proposed by the Master Car-Builders' Association. My object in offering an amendment to Mr. Waitt's motion was to have a committee

appointed to frame these Rules or By-Laws, so that we could harmonize them with the recommendations of the committee. We want the privilege of expressing an opinion as to where the meeting shall be held. We cannot know, sitting here, and from the little investigation we can make, as to whether it would be practicable to hold a meeting at one place or another. But we should express an opinion as to where we want it held, and if it is found impracticable to hold it in that place, it could be held somewhere else, and that would be entirely in the hands of this joint committee.

THE PRESIDENT: Your amendment has not been seconded, I believe.

MR. LENTZ: I second Mr. Schroyer's amendment.

MR. ADAMS: The object of appointing this committee, as I understand the matter, was to bring the associations more into harmony with each other, and we couldn't see in discussing the matter how we could make them very harmonious if we allowed the associations, each of them, to select their own places. We have got to put it into the hands of this committee of both associations in order to effect the object. Now, it shows evidently, that there is going to be a little dissatisfaction—just what I expected—just what I wanted to bring out, and if it is not going to be satisfactory—which I confess myself I feel doubtful about—I hope they will vote the thing down and let it be right where it was before. It has always been very satisfactory, and I do not see why we should act any differently from what we have done heretofore. We are under no special obligation that I know of to consider the Master Mechanics' meeting at all. We are an association by ourselves, and we act on our own resources. Now if the Master Mechanics want to fall in with us let them fall in. I have not any objection. (Laughter.) If they want to meet where we do I have no objection at all, but we cannot harmonize together and both agree upon meeting at a certain place, unless we have a committee from both associations and let them confer. I cannot see how we can do it any other way, and I think it was the general understanding of the committee in discussing that matter, that we were obliged to put it into the hands of committees from each association to fix this place of meeting. Now, if we nominate two or three places and vote that we will have one of three places, and the Master Mechanics' Association fixes three other places, which they would be

very likely to do, then we would have six places. They cannot confine themselves to three places any way in the world that I can see. We have either got to leave this thing just as it was or else adopt something of this character, it seems to me.

**THE PRESIDENT :** The question is on Mr. Schroyer's amendment that a committee be appointed to revise the By-laws so as to make them conform to the recommendations of the joint committee, that committee to report — when ?

**MR. SCHROYER :** On Thursday morning of this week.

**MR. BISSELL :** This is a radical change. This isn't a patching up of anything. If the motion is lost, there is no use of tinkering with the By-laws. As Mr. Adams says, you have got to go one way or the other.

**MR. SCHROYER :** I want to say, as regards that, that there are many members of this Association, who, on this question, will cast but one vote. They have very decided opinions as regards this subject, and I want to say, so far as I am concerned individually, that it is a matter of indifference to me whether our meeting is held in the spring and the Master Mechanics' in the fall. But in view of the fact that the meetings always have been held so close together, and many members of the Master Mechanics' Association are members here, and when they leave home expect to attend the two meetings, I have made this proposition. Discussions have come up with regard to the consolidation of the two associations, and everybody fights it off among the Master Car-Builders. I fight it off myself. I don't want to see a consolidation of the two associations ; but is there any good reason why we shouldn't go part way to meet them as regards contracting the time in which the two association meetings are held ?

**MR. MACKENZIE :** The motion of Mr. Schroyer is certainly superfluous. The committee that this Association appointed last year have done the very work that this gentleman wants done all over again. The committee have made the recommendation for the revision of the By-laws. The Secretary has simply got it into shape for us to look at it properly. Now, if you don't want that resolution, knock the committee out and the resolution, and no further talk is necessary.

**THE PRESIDENT :** I suppose if this amendment is brought before the convention you can vote it down.

**MR. CASANAVE :** As the By-laws stand now, there is nothing to prevent a committee of this Association from arranging a place of

meeting with the Master Mechanics, and the matter may as well, it seems to me, stand where it is, and end this discussion, and with that object in view, I move to lay the whole subject on the table.

The motion was seconded, and a *viva voce* vote was taken thereon.

THE PRESIDENT: I must call for a rising vote.

MR. BISSELL: I would like to ask if it does away with the whole question entirely?

THE PRESIDENT: Simply the discussion of Mr. Schroyer's motion.

A MEMBER: I understood that to apply to the whole discussion, to the committee report and all.

MR. CASANAVE: My motion is to lay the whole subject on the table, and leave the By-laws as they are now.

THE PRESIDENT: The committee's report, too?

MR. CASANAVE: The whole thing.

MR. LENTZ: I doubt whether Mr. Casanave's motion would now be in order. The motion to lay a motion on the table would be properly in order, I understand, but he has added to that, that the entire subject be dropped.

MR. CASANAVE: I move that the whole subject be laid upon the table.

MR. LENTZ: And the By-laws remain as they are.

MR. CASANAVE: That is merely as a matter of explanation. I move to lay the whole subject on the table, and let the By-laws remain as they are.

MR. LENTZ: If that is added to the motion I think it is out of order.

MR. CASANAVE: I would not add it to the motion. I simply move to lay the whole subject on the table.

THE PRESIDENT: Gentlemen, you have heard Mr. Casanave's motion. All in favor of that will signify by saying aye—contrary, no.

I will have to call for a rising vote.

A rising vote was taken. There were 25 ayes and 45 noes, and the motion was declared lost.

The question on Mr. Waitt's resolution was called for by several members.

THE PRESIDENT: The question is now on Mr. Schroyer's amendment, that a committee be appointed to revise the By-laws, so as to

make them conform to the recommendations of the joint committee, and report next Thursday morning. All in favor of the resolution will signify by saying aye—contrary, no.

The motion was lost.

MR. WAITT: My motion was that the recommendation of the committee be adopted, and that the By-laws be so changed as to correspond with the committee's recommendation. The Secretary can make those changes.

MR. SCHROYER: I cannot see in the motion now before the house any difference from what it was with my amendment, except that the present motion gives the Secretary the right to amend the By-laws.

MR. MACKENZIE: To write them out.

There were many calls for the question.

THE PRESIDENT: Gentlemen, you have heard Mr. Waitt's motion. It is not necessary for me to repeat it. All in favor of that motion will signify by saying aye—contrary, no.

The motion was carried.

MR. CLOUD: The Secretary does not know of any further unfinished business, but there are one or two announcements I would like to make.

I have received a communication, saying that the Entertainment Committee are pleased to extend an invitation to attend "An Evening in Sorcery," at the Pier Opera House, at 8 this P.M., sharp.

I would also like to announce that the minutes of the Executive Committee's meetings can be seen by any members who wish to see them in the room of the Executive Committee, parlor D, any time between sessions.

MR. BISSELL: Before there is anything more done, we ought to make a disposition of Mr. Adams' committee. I move that the committee be discharged.

THE PRESIDENT: It is moved and seconded that the committee from this Association to confer with the Master Mechanics' Association on the place of meeting, be discharged. All in favor of the motion will signify by saying aye — contrary, no.

The motion was carried.

MR. MACKENZIE: I move the Secretary be instructed to notify the Master Mechanics' Association of the action of this Association.

MR. LENTZ: I second the motion.



MR. SCHROYER : I can say as regards that, that we are not through with our action. Wouldn't it be advisable to wait until we got through?

THE PRESIDENT : What further have we to do, Mr. Schroyer?

MR. SCHROYER : There was a motion carried a little while ago to have the By-laws amended by our Secretary to conform to the recommendations of the committee. That hasn't yet been done. When the recommendation is made by the Secretary it may not be accepted by the Association.

MR. E. CHAMBERLAIN : It seems to me that the Secretary clearly stated what corrections were to be made in the By-laws, and about the time that motion was carried, or previous to that, he had read them, so that I think the matter is definitely understood.

THE PRESIDENT : There is a motion before the house that the Secretary of this Association notify the Master Mechanics' Association of the action of this meeting this morning. All in favor of that motion will signify by saying aye — contrary, no.

The motion was carried.

MR. E. CHAMBERLAIN : May I inquire if any action was taken on the very kind invitation of the Entertainment Committee?

THE PRESIDENT : We didn't think it was really necessary, Mr. Chamberlain.

MR. CLOUD : The announcement of the entertainment before the convention was quite sufficient. I understood this to be simply a notice.

THE PRESIDENT : Is there any new business to be brought before the convention this morning?

MR. CLOUD : If no one has any new business, I would like to suggest that Article VII of the By-laws calls for questions to be discussed at 12 o'clock noon each day. I do not know whether you want to change that or not. It has not been enforced as a general thing.

THE PRESIDENT : At some of our previous meetings questions were handed to the chair for discussion at 12 o'clock, or from 12 to 1. That has been dropped out of use for some reason or other. I think it is a very good thing. If any one has any questions to discuss at this time we would like to take them up, but it is well to put them in writing and place them in the hands of the Secretary.

No questions were proposed.

THE PRESIDENT: The next business in order is the reading of reports of committees. Mr. Rhodes, will you present your report?

MR. CLOUD: The chairman of this committee would like to have his report postponed until a little later on account of his wish to present some drawings in discussion, which he has not now with him.

THE PRESIDENT: The next report is that of the Committee on the Lettering of Freight Cars. Mr. Grieves, I think, is chairman of that committee.

Mr. Grieves, on behalf of the Committee on the Lettering of Freight Cars, submitted the following report:

#### REPORT OF COMMITTEE ON LETTERING FREIGHT CARS.

*To the President and Members, Master Car-Builders' Association:*

Your Committee, appointed to consider the subject of standard marking for freight cars, submits the following recommendations, in connection with Figures 1 and 2, illustrating the proposed standards as applied to box, stock, gondola and flat cars:

##### BOX CARS.

1st. The half of the side of the car on which the doors do not slide should show the name of the railroad company, with the number of car immediately below it, and it is preferable that the name be spelled out in full, but if abbreviations are used, they should be such as to clearly indicate the name of the road. When initials only are used, it is urged that the name appear in full below the number, in letters not over 4 inches high. When necessary, in order to present the full name of the railroad company, two lines should be used, as shown. The letters and figures for this marking should be 7 to 9 inches high. The light weight of the car, with such other information as is necessary in connection therewith, should be placed below the number of car, near the sill, using letters and figures 3 or 4 inches high.

2nd. The half of the side of the car on which the doors slide should be reserved for trade marks when used, also for marking air brake and Master Car-Builders' standard coupler, when cars are so equipped and marked, or for any other special marking; the capacity of car and, if so desired, the size of journal to be placed on this half of car, near the sill, using letters and figures 3 or 4 inches high.

3rd. The side doors on each side of car should be marked near the top with the initials of railroad company, using letters 4 or 5 inches high; the initials and number of car should be marked on the inside of car, over the door opening.

4th. Each end of the car should be marked near the top, on the right-hand side, facing the end of car, with the initials of railroad company and number of car, using letters and figures 4 or 5 inches high.

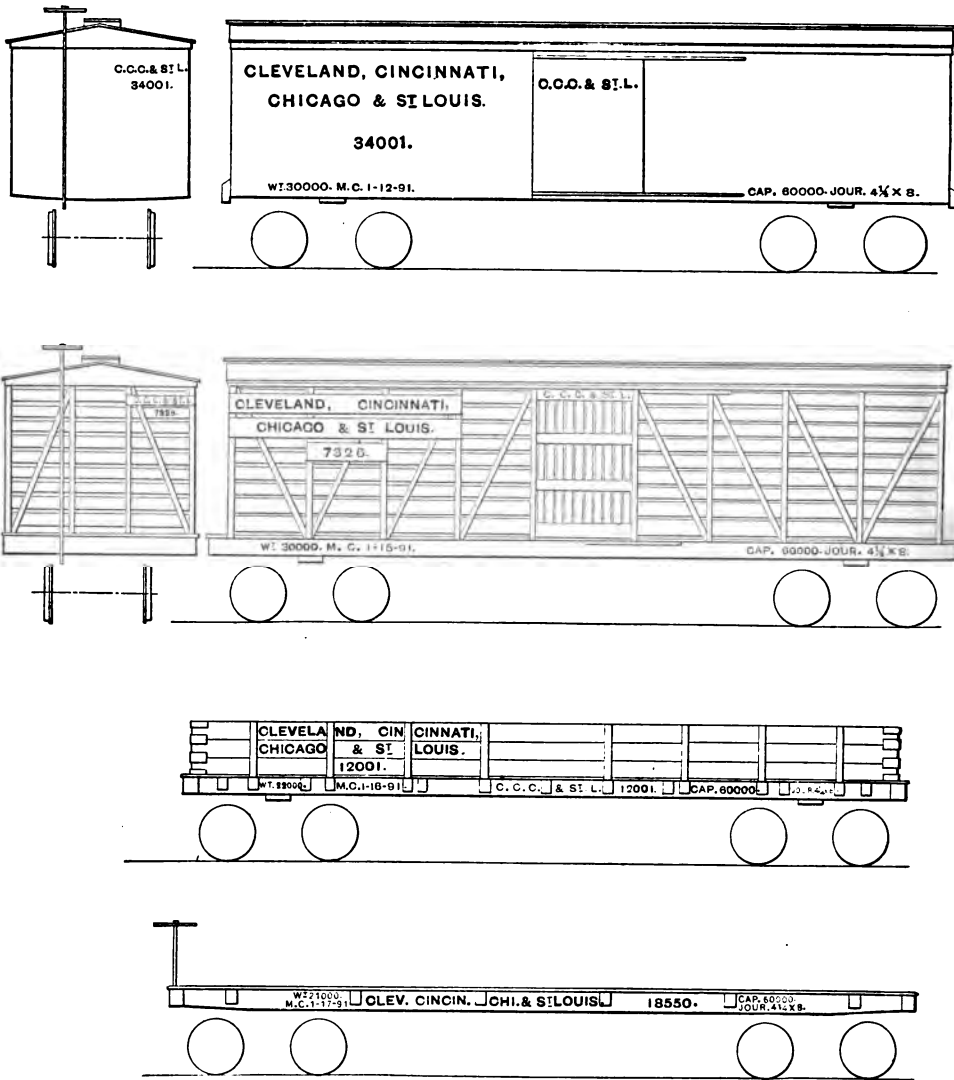


FIG. 1.

WITH REPORT OF COMMITTEE ON "LETTERING FREIGHT CARS."  
PROPOSED STANDARD ILLUSTRATED.

NOTE.—When the report was submitted the car numbers appeared upon the car doors also.

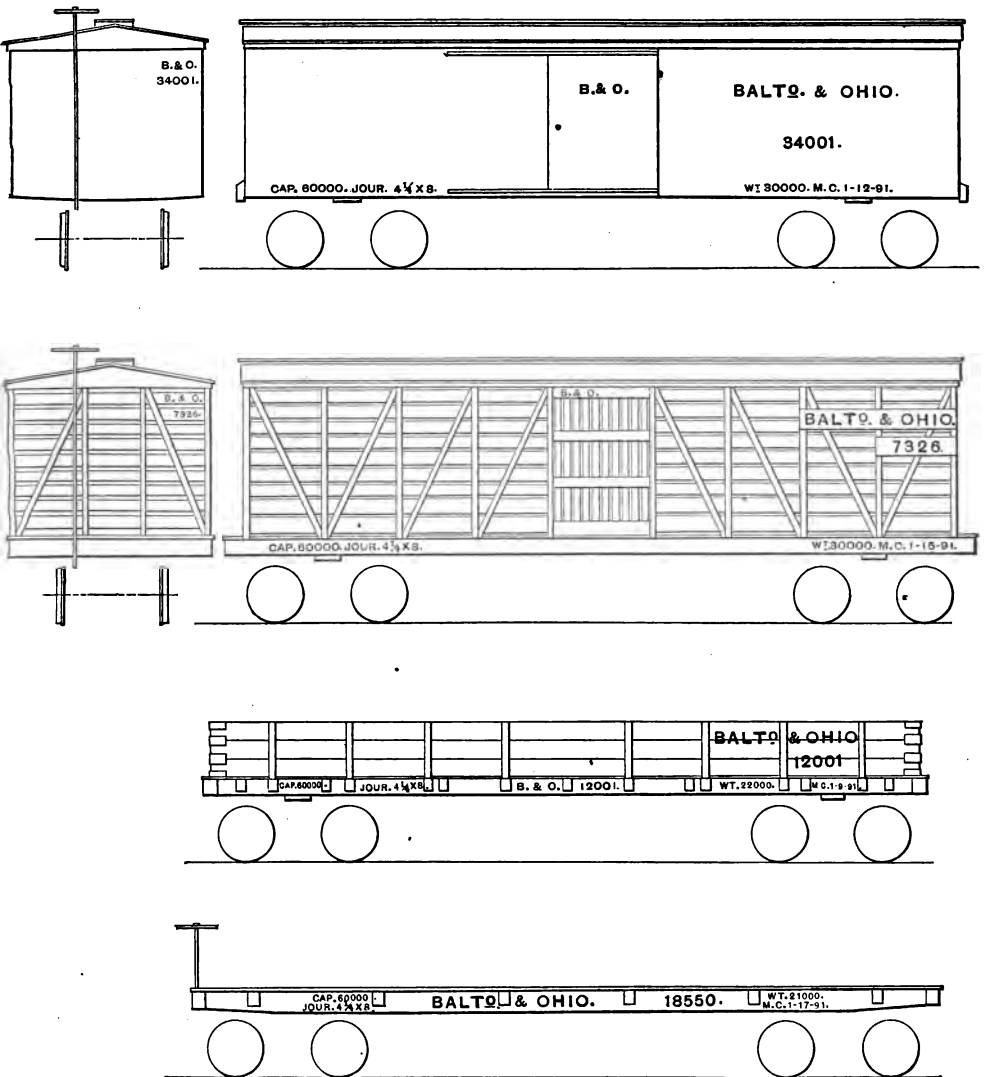


FIG. 2.

WITH REPORT OF COMMITTEE ON "LETTERING FREIGHT CARS."  
PROPOSED STANDARD ILLUSTRATED.

NOTE.—When the report was submitted the car numbers appeared upon the car doors also.

## STOCK CARS.

5th. On the half of the side of car on which doors do not slide it is preferable, rather than to place the marking on the slatting, that a board be placed, extending from the corner post to one of the body posts, sufficiently long to contain the name of the railroad company, or, if necessary in order to give the full name of the railroad company, two boards may be used, the number appearing on a third board below, in the same manner as explained for box cars, using letters and figures of the same size as for box cars. If abbreviations or initials only are used, the same directions should be followed as are given for box cars. The light weight of the car, with such other necessary information, should be placed on the side sill, using letters and figures 3 or 4 inches high.

6th. Suitable boards should be placed on the half of the side of car on which doors slide, for any marking that may be desired, such as trade marks, air brakes, Master Car-Builders' standard coupler, etc.; the capacity of car and, if so desired, the size of journal, should be placed on the side sill on this half of the car, using letters and figures 3 or 4 inches high.

7th. The side door on each side of car should be marked on the top rail with the initials of the railroad company, using letters 4 or 5 inches high. The initials and number of car should be marked inside over the door opening.

8th. Each end of car should be marked on the slatting with the initials of road and number of car, using letters and figures of same size as for box cars. If the initials cannot be gotten on the slatting, a board should be used, fastened on the right-hand side when facing the end of car.

## GONDOLA CARS.

9th. Gondola cars should be marked on the side near one end of car with the name of railroad company, and number of car immediately below it, using letters and figures 6 to 9 inches high. It is preferable that the name be spelled out in full; but, if abbreviations are used, they should be such as to clearly indicate the name of the road. If initials are used, it is urged that immediately below the number the full name of the railroad company should appear in letters not over 4 inches high. When necessary in order to present the full name of the road, two lines may be used as shown. Any other marking desired, such as trade marks, air brakes, Master Car-Builders' standard coupler, etc., should be placed near the opposite end of car. The initials of road, followed by number of car, should be placed on the side sill, near the center of car, for use in case the side planks are removed. The light weight of the car, with such other necessary information, should be placed on the side sill below the number, using letters and figures 3 or 4 inches high. The capacity of car and, if so desired, the size of journal, should be placed on the side sill at the opposite end of car, using letters and figures 3 or 4 inches high.

10th. When cars have stationary ends, the initials of railroad company and number of car should be marked on each end near the top, at the right-hand side when facing the end of car, using letters and figures the same size as for box cars.

## FLAT CARS.

11th. Flat cars should be marked on the side sill, near the center of car, with the name of the railroad company, followed by the number of car, the size of letters

and figures to be as large as can be used to advantage. Where possible, the name of the road should be spelled out in full, or, if abbreviations are used, they should be such as to clearly indicate the name of the road, but if only initials are used, the full name should appear in smaller letters. The light weight of the car, with such other necessary information, should be placed near one end of the car; the capacity of the car, and, if so desired, the size of journal, should be placed near the opposite end, using letters and figures the same size as for gondola cars. Any other marking that may be desired, such as trade marks, air brakes, Master Car-Builders' standard coupler, etc., should be placed in the most available space on the side sill.

#### GENERAL.

12th. Open cars of all other types, not herein provided for, should be marked as near like the marking described for gondola cars as the construction of such cars will admit, excepting that it may not be necessary to place the initials of railroad and number of car on the side sill.

13th. A portion of the outside intermediate sill under all cars, preferably near the center of car, should be painted with brown or black paint, and on this space the initials of road and number of car to be stenciled in white, using letters and figures 3 or 4 inches high.

14th. The initials of railroad and number of car should be stenciled on both sides of bolster, wooden or channel iron transom in each truck, under all cars. The size of journal should be marked on each side of truck in the most convenient place.

Respectfully submitted,

E. W. GRIEVES,  
G. W. DEMAREST,  
R. D. WADE,  
*Committee.*

#### DISCUSSION.

MR. WALL: I move that the report of the committee be received and the committee discharged, and its recommendations submitted to letter ballot as standard.

MR. WEST: I would like to say in Article 3, under box cars, the word "figures" was left out. Article 3 mentions only the initial of the railroad company being placed on the side doors. I think the numbers should be there as well, and I see they are shown on the drawings.

MR. GRIEVES: It should be there; it was left out inadvertently.

MR. BARBER: We have had some of our side doors numbered and have just got through taking the numbers all off, as it led to confusion.

THE PRESIDENT: I think Mr. Barber's point is perfectly correct as to numbers on car doors.

MR. BARR: It seems to me that the report is all right. The committee recommends that the side doors shall be marked with the initial of the road.

MR. MACKENZIE: I do not think the report is before us. It has not been formally received.

THE PRESIDENT: What will you do with the report of the committee?

MR. GRIEVES: I would like to say that it was the intention of the committee — I do not know whether Mr. Demarest recollects it or not — to have Article 3 read—

Side doors on each side of the car should be marked near the top with the initials of the railroad company and number of car, using letters and figures four or five inches high.

That would meet the objection.

MR. WALL: That is the way the cuts show.

MR. GRIEVES: Yes.

MR. BARR: Then to bring the matter before us without delay, I would amend Mr. Wall's motion to read that Article 3 on box cars should read just as it reads now; that is, that side doors on each side of the car should be marked near the top with the initials of the railroad company, and that the cuts which show the numbers of the car on the side doors should be changed to show only the initials of the road.

MR. WALL: I accept that amendment.

MR. WEST: I would like to know what we are going to do with all the lost doors.

MR. WALL: Put them on any car.

MR. SCHROYER: Let me say, as regards this matter, I do not know whether you are all situated with respect to this question as I am or not. But the Mechanical Department of the Northwestern road does not have anything to say as to what shall go on a car, and it is fair to assume that there are many other roads in the same fix as we are. Now, while the action of this Association is only in the shape of a recommendation, I do not feel disposed to see a question go to letter ballot knowing at the time that I am going to vote against it, and the question that presents itself right here is, is it any of our business, as heads of the mechanical department, what lettering the officers of the road elect to put on a car?

MR. GRIEVES: If that is the condition of the Northwestern road, I do not think there are many other roads in the same shape. I have not received any such reply from anyone, except Mr. Schroyer, and, while I am on the floor, I might say that I am very sorry that the omission was made here, as it was intended that our recommendation should call for the number of the car on the door, and it seems to have been left out, which I did not notice until the gentleman spoke of it.

MR. WEST: We are called upon to pay \$5 for every car door that is lost on our road, and plenty of these car doors can be replaced. I cannot see any objection to a number being placed on the door, somewhere on the door; I do not care whether it is inside or outside.

THE PRESIDENT: It may not be in order for me to say very much on this question, but if you picked up that door on the line of your road, and wanted to put it on another car, you would have to paint the number off before you could do so.

MR. WEST: It is the same with the doors as with the couplers. There are very few standard car doors, I am sorry to say.

MR. DAY: I would move that the clause be amended by inserting the number of the car on the door. I think it is very necessary.

THE PRESIDENT: Your motion is out of order, Mr. Day. There is a motion before us that Article 3 be left as it is, namely, "The initials of the railroad company to be placed upon the door, and that the cuts be altered by removing the car numbers, and show the initials of the road only."

MR. DAY: I think my amendment comes in there, Mr. President. The resolution now is to accept this article as it has been read, keeping the numbers off the door, and putting it to letter ballot. My amendment was that the numbers of the car should be inserted.

MR. CLOUD: All you have to do, Mr. Day, is to vote the other way. Your motion would simply reverse the vote.

THE PRESIDENT: All in favor of the motion as amended will signify by saying aye—contrary, no.

The motion was carried.

MR. WEST: What was the motion?

MR. CLOUD: The report has been accepted, and the committee discharged. The report has been ordered submitted to letter ballot, after having first taken the car numbers off the car doors.



THE PRESIDENT: Next in order is steam heating and ventilating of passenger cars. Mr. Barr is the chairman of that committee, and he will present the report.

MR. BARR: I have not the report of the committee with me at present, and would therefore ask the Association to take up the next subject.

THE PRESIDENT: The next subject in order is steel plate and malleable iron in car construction. Mr. Forsyth is the chairman of that committee; will he present the committee's report?

Mr. Forsyth read the following report from the Committee on Steel Plate and Malleable Iron in Car Construction.

#### REPORT OF COMMITTEE ON PRESSED STEEL AND MALLEABLE IRON IN CAR CONSTRUCTION.

##### PRESSED STEEL.

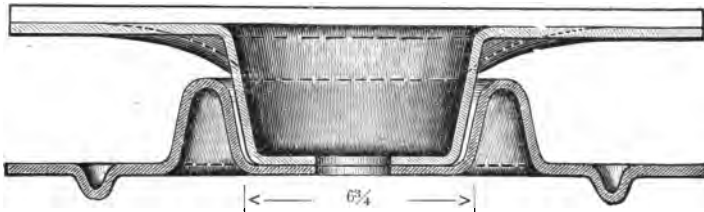
Since our last report, the use of pressed steel for car details has continued to increase, so that there is now about 15,000 tons of this material on cars in the United States.

In addition to the pieces already reported, pressed steel shapes are now used for post pockets, side bearings, bolster guide bars, bolster guide blocks, stakes for gondola cars, corner bands, brake beams, door hoods, etc. Illustrations of some of these pieces are here given — Figs. 1 to 6.

In order to prevent too great a diversity of sizes of stake pockets, it is suggested that the sizes at the top should vary by  $\frac{1}{2}$  inches, thus: 3 by  $3\frac{1}{2}$  inches;  $3\frac{1}{2}$  by 4 inches;  $3\frac{1}{2}$  by  $4\frac{1}{2}$  inches;  $3\frac{1}{2}$  by 5 inches; 4 by 5 inches; and that they have a uniform taper in each direction of  $\frac{1}{4}$  of an inch in 6 inches.



FIG. 1.



Pressed Steel Center Plates.

Bolt-hole centers, width, length and height over all made to suit bolsters.

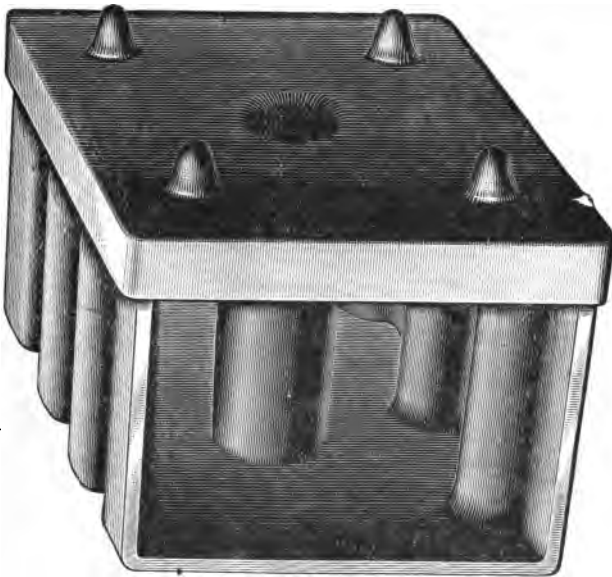


FIG. 2.

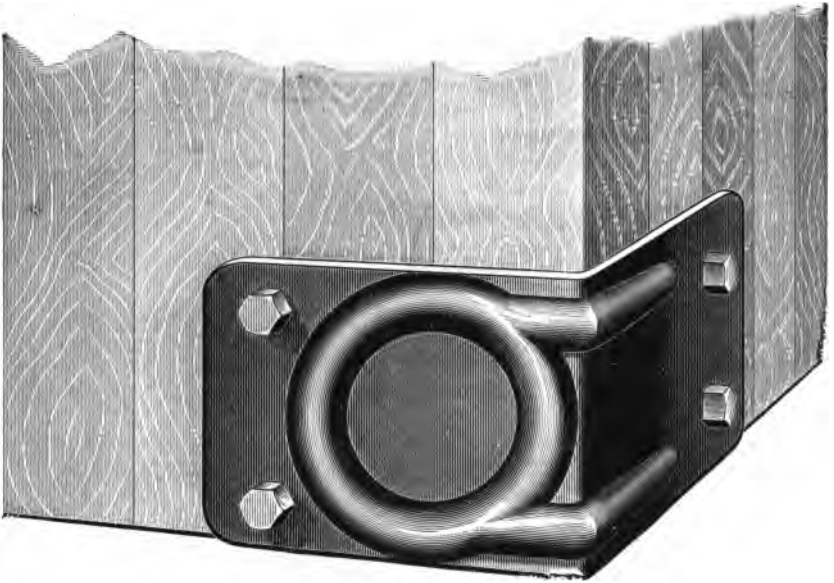


FIG. 3.

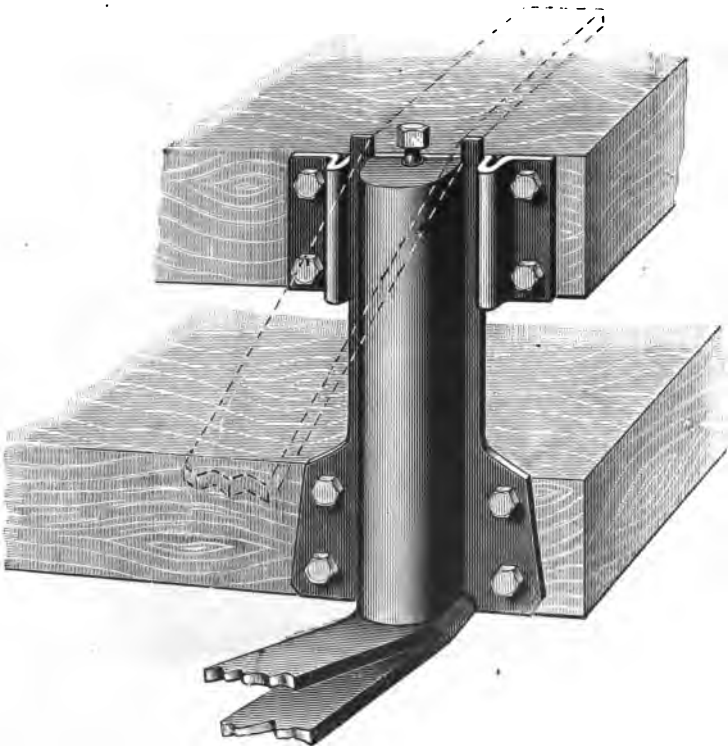


FIG. 4.

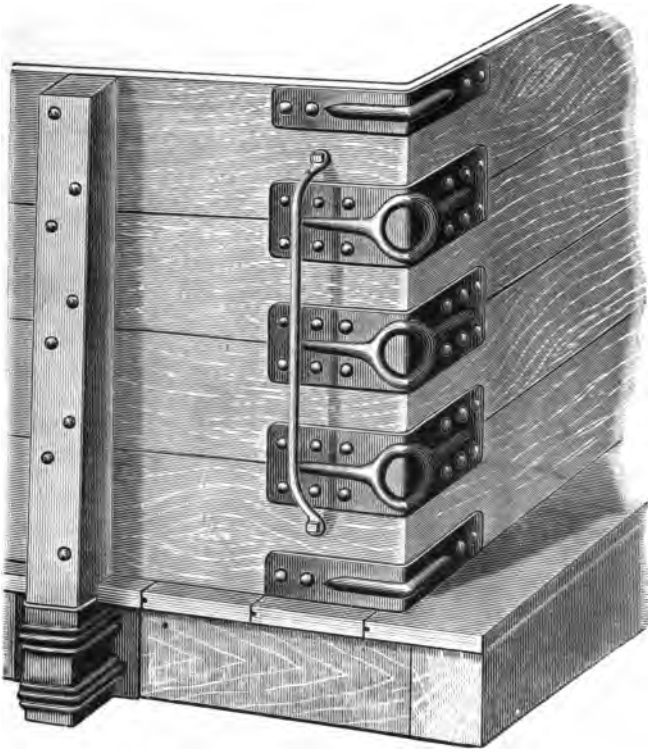


FIG. 5.

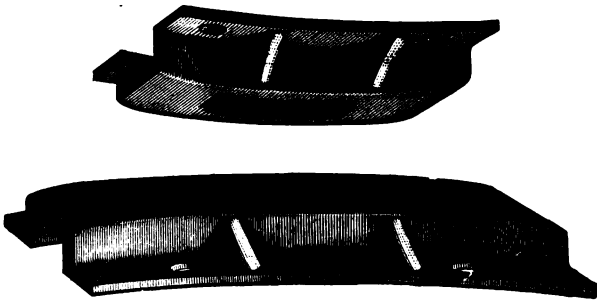


FIG. 6.

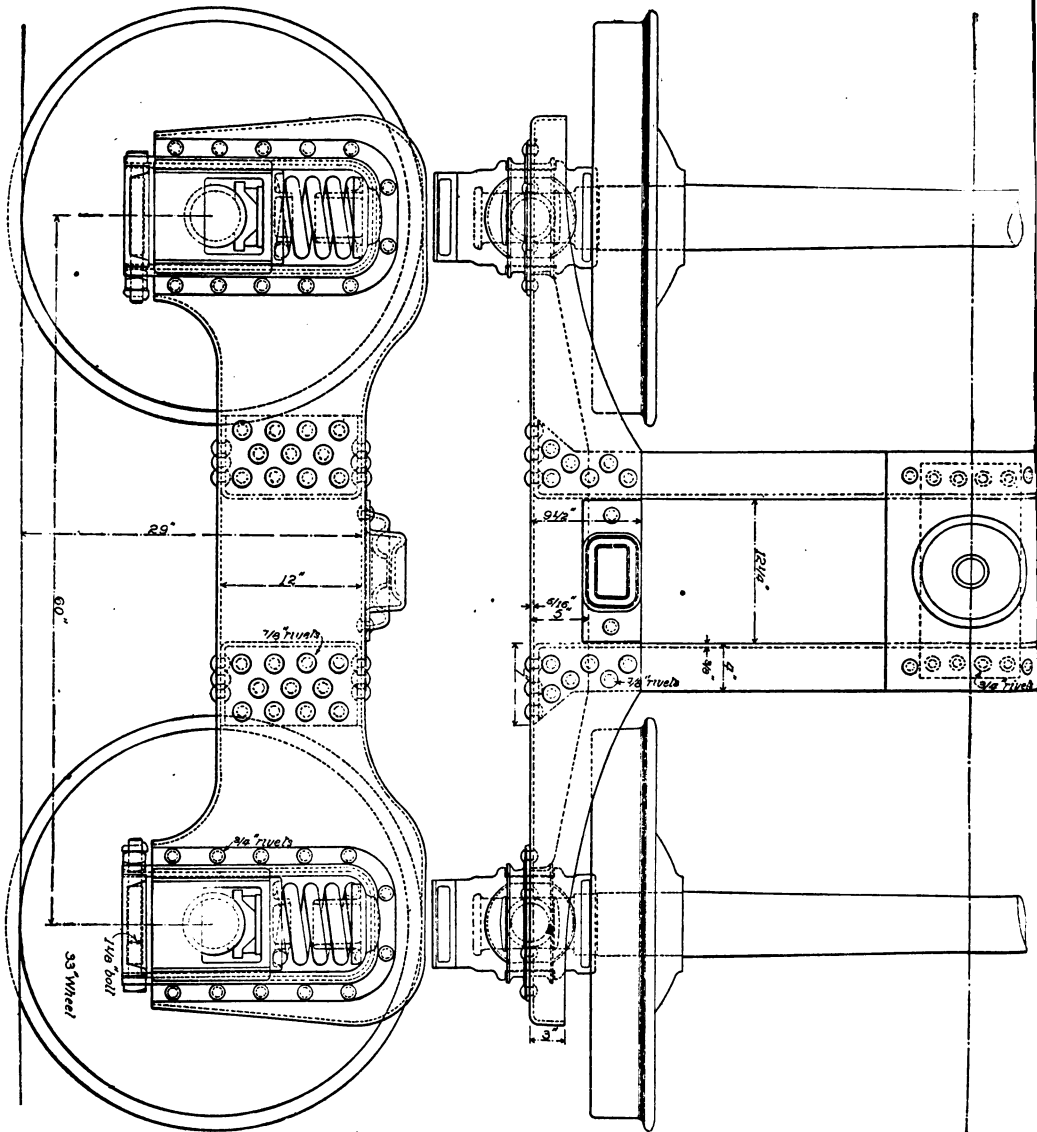


FIG. 7.

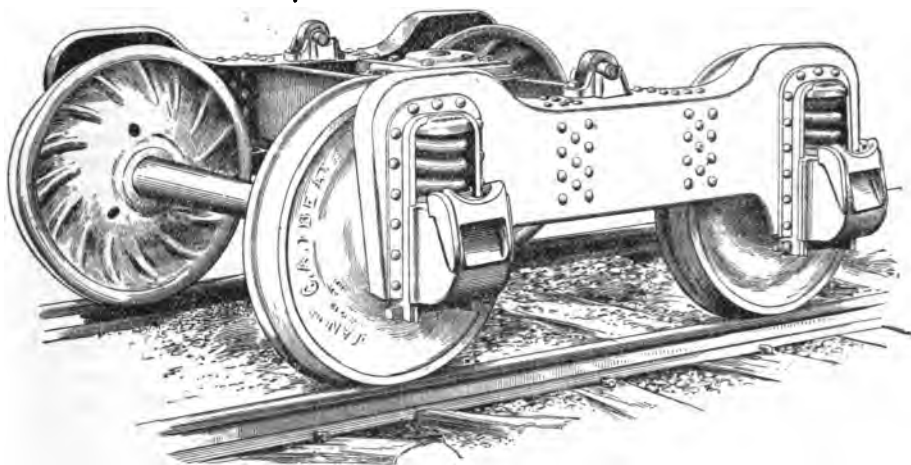


FIG. 8.

The center-plate, Fig. 1, is the form which has been used most extensively. It is preferred by manufacturers as the best form into which the steel can be pressed, and experience with this form on 25,000 cars is very satisfactory. The larger annular rib resists most of the thrust on the plate, and prevents any shearing of the center-pin. The bearing surface on the bolster is made as large as possible.

Some pressed steel plates have been made with the bottom portion at the center raised from the bolster, so that the load is carried in suspension. The constant movement of the steel plate under the variations of load has already produced rupture in a number of such plates.

For this reason, forms where the central portion has no bearing on the bolster (similar to Fig. 6 in our report of last year) are not recommended.

For cars of 60,000 pounds capacity, pressed steel center plates should be at least  $\frac{1}{2}$  inch thick.

The center plate, Fig. 1, is recommended as one standard form, so far as the bearing portion between center plates is concerned, leaving the width between flanges, height over all and bolt centers to be made to suit the bolsters on which they are used.

Pressed steel freight trucks are being gradually introduced in this country, and are now in service on a number of our roads. (See Figs. 7 and 8.)

The weight is somewhat less than the diamond truck for 30-ton cars, and it is furnished at the same cost. The cost of material and labor in a diamond truck (exclusive of frame) is \$80, and the pressed steel frame is supplied at \$45 each, making the total cost of one pressed steel truck complete \$125.

The strength of these trucks is greater than the heaviest diamond truck now made.

A shop near Chicago is now engaged in building steel freight cars, and they will soon have twenty-five or thirty metal cars in service.

## MALLEABLE IRON.

We have nothing new to report about malleable castings in car work, except to call attention to the fact that, as the majority of the Master Car-Builders' standard couplers are now made of this material, we should have more information as to its strength, and its behavior under the severe blows to which couplers are subjected. The shape of the arms and the lugs (or ears) of this coupler makes it a very weak form for a buffer, it should therefore be made of a material having the greatest resistance to shocks.

In preparing our report of last year, we were unable to get from manufacturers any definite figures on the strength of malleable iron. The statements in that report relating to the strength and resistance of malleable castings should be taken to apply only to thin sections  $\frac{1}{4}$  inch or  $\frac{3}{8}$  inch thick.

The rules given for designing patterns for malleable castings, state that "the strength of the casting depends very much upon the design, and that the *strongest* portion is the outside surface." "The strongest form is a star-shaped section. For brackets, a *number of thin ribs* should be used instead of *one thick one*."

A thin section being therefore necessary to secure superior strength in malleable castings, it seemed evident that in a casting like the Master Car-Builders' coupler, 1 inch and  $1\frac{1}{4}$  inches thick in the arms and lugs, we would not get the advantage of the high strength and ductility usually attributed to malleable iron.

This fact has such an important bearing upon the question whether malleable cast iron is the most economical material for the Master Car-Builders' coupler, that we have made some investigation of the strength of malleable castings of various thicknesses, from  $\frac{1}{4}$  inch up to  $1\frac{1}{2}$  inches, increasing by eighths, and we present the results below.

The samples were obtained from the National Malleable Casting Company, Chicago, and were tested at the Chicago, Burlington & Quincy Laboratory at Aurora.

We believe the results here given are the first published tests of the strength of malleable cast iron.

## TENSILE TESTS OF MALLEABLE CASTINGS.

C., B. &amp; Q. R. R., AURORA, ILL., May 20, 1891.

Nominal Dimensions.	Actual Dimensions.	Area in Square Inches.	TENSILE STRENGTH.		Per Cent of Elongation in 4 Inches.	ELASTIC LIMIT.		REMARKS.
			Actual.	Per Square Inch.		Actual.	Per Square Inch.	
Inches.	Inches.							
$1\frac{1}{2}$ by $\frac{3}{4}$	1.52 by .25	.38	13,200	34,700	2	8,000	21,100	
$1\frac{1}{2}$ " $\frac{3}{8}$	1.52 " .39	.593	20,000	33,700	2	9,000	15,200	
$1\frac{1}{2}$ " $\frac{1}{2}$	1.53 " .5	.765	25,100	32,800	2	13,000	17,000	
$1\frac{1}{2}$ " $\frac{5}{8}$	1.53 " .64	.979	31,400	32,100	2	19,000	19,400	
2 " $\frac{3}{8}$	2 " .78	1.56	39,100	25,100	$1\frac{1}{2}$	24,000	15,400	
$1\frac{1}{2}$ " $\frac{1}{2}$	1.54 " .88	1.355	45,500	33,600	$1\frac{1}{2}$	26,000	19,200	
1 " 1	1.06 " 1.02	1.08	33,000	30,600	1	19,000	17,500	
$1\frac{1}{2}$ " $1\frac{1}{4}$	1.28 " 1.3	1.664	45,600	27,400	1	.....	.....	
$1\frac{1}{2}$ " $1\frac{1}{2}$	1.52 " 1.54	2.341	66,000	28,200	$1\frac{1}{2}$	.....	.....	

While the results do not show any *regular* reduction of strength with increased thickness, yet it is plain that the average strength of the thin specimens is much

greater than the thick ones. Thus the average strength of pieces  $\frac{1}{4}$  inch thick, up to  $\frac{3}{8}$  inch inclusive, is 33,300 pounds, and of the thick pieces,  $\frac{3}{8}$  inch up to  $1\frac{1}{2}$  inches, inclusive, only 28,980 pounds — the thin specimens being 15 per cent stronger than the thick ones.

But the most important fact brought out by these tests is the low ductility of malleable cast iron, whether *thick* or *thin*.

The specimens  $\frac{1}{4}$  inch and  $\frac{3}{8}$  inch thick had an elongation of only 2 per cent in 4 inches, and those  $1\frac{1}{4}$  inches thick only 1 per cent in 4 inches.

We can now give the tensile resistance and ductility of malleable cast iron, as compared with that of other metals suitable for those details of cars which are subject to severe blows.

Current specifications for wrought iron require a strength of 50,000 pounds and an elongation of 20 per cent in 4 inches.

For good cast iron, 20,000 pounds.

For steel castings, 60,000 pounds and 10 per cent elongation in 4 inches.

COMPARATIVE TENSILE RESISTANCE AND DUCTILITY OF MALLEABLE CAST IRON  
AND OTHER METALS.

	Ultimate Strength. Lbs. per Square Inch.	Strength Rank with Cast Iron as Unity.	Per Cent of Elongation in 4 Inches.	Ductility Rank with Malleable Iron as Unity.	Specific Gravity.
Cast Iron.....	20,000	1	0.35	.....	7.21
Malleable Cast Iron...	32,000	1.6	2.00	1	7.37
Wrought Iron.....	50,000	2.5	20.00	10	7.77
Steel Casting.....	60,000	3	10.00	5	7.50

WILLIAM FORSYTH,  
JOHN MACKENZIE,  
E. D. BRONNER,  
*Committee.*

DISCUSSION.

On motion of Mr. Townsend, the report was accepted and the committee discharged.

MR. FORSYTH: Please observe that there are two recommendations as to standards in this report.

MR. BARR: I would say that I consider this a very important subject. The use of steel, malleable iron and wrought iron in car construction is an extremely important subject, and I think at the present time we are going through a transition period where it is important to collate as much as possible the information and experience that the different roads are gaining in this matter. I think we all know that there are a great many peculiar points developed. This committee's report, for instance, shows that the strength of steel will rank as 3 as compared with wrought iron  $2\frac{1}{2}$ . I think it is the experience of a great number of the members of this Association that



wrought iron is not as liable to break as steel. Of course the ductility shows 10 in favor of wrought iron to 5 in favor of steel castings, which somewhat explains what would be an anomaly if we looked merely at the strength. I think there is going to be decided development in this matter, and I would suggest that we reappoint this committee to report further progress at the next meeting.

MR. WALL: I move that we submit to letter ballot the recommendations of this report, and that when pressed steel is used that the sizes and taper given for stake pockets on page 1, and that the form of the center plate shown in Fig. 1, shall be considered as standards of this Association — that is, when pressed steel is used.

MR. GRIEVES: I would like, in seconding that motion, to inquire of Mr. Forsyth as to the form of center plate given here, whether he made any test as to this form of center plate. That is, I would like to know whether that is the correct form of center plate.

MR. FORSYTH: I have not made any tests, but that form of center plate was tested by the Reading road when the first steel center plates were used. As the result of their tests they put into service several thousand of the plates, and Mr. Paxson reports them as being entirely satisfactory. The manufacturers of the plate also say that the service of this form is so satisfactory that they have recommended it as the best shape.

MR. GRIEVES: Is not this about the same form of center plate as that used on the Reading road?

MR. FORSYTH: Yes, sir, and it was tested by Mr. Paxson before ordering a large number.

MR. CLOUD: I would like to say, in connection with the motion, that I have a tracing which I received from Mr. Forsyth, the chairman of this committee, too late to have a cut made, and that it is exactly like Fig. 1, showing the center plate, with one exception: in place of the dimension of  $6\frac{3}{4}$  inches shown, it has 6 inches for bolsters 9 inches and under, and  $6\frac{3}{4}$  inches for bolsters over 9 inches.

MR. BARR: I am afraid that if we submit this to letter ballot, we will be in a good deal the same shape as we were when we adopted a 60,000-pound standard box lid. We adopted the lid, but we didn't have anything to put it on. I think a good many of us rather felt that we were a little premature in that matter. I think it delayed action for a considerable time by taking that step, and

we will be a good deal in the same fix here, if we take these sizes for pressed stake pockets, and do not at the same time fix the size of the U bolts that are to hold them. I do not think this should be submitted to letter ballot until we have a complete drawing of it — a complete drawing showing the width of the bolts that are to hold it to the sill. In the same way with reference to the center plate. There are a great many roads now using wooden transoms, a great many using iron transoms, and a great many widening their iron transoms. It leaves us with something that is extremely indefinite and puts the question before the Association to vote on in such an indefinite way that I do not believe there are many who would feel like voting at all, or if they did vote would vote no. That, I think, is a misrepresentation, because I believe these things are coming, but if we do not put them in a proper form when we present them to letter ballot the result is that the thing is lost and there is the delay of another year.

MR. SCHROYER: In this connection it is my impression that all these forms as illustrated herein are covered by letters patent. I would like to call the attention of the Association to Section 2 of Article IX of our Constitution, which reads:

All reports, resolutions and recommendations involving the use or proposed use by railroad companies of any device or process which forms the subject matter of any existing patent shall first be submitted to the Executive Committee, and shall be submitted to the Association only by the Executive Committee.

I think that bears directly on Mr. Wall's motion.

MR. WALL: Mr. President, there are two points in connection with that. One is, that if the Executive Committee found that its recommendations did interfere with letters patent, why, they would not submit them to a letter ballot. The other is, that this recommendation by the committee of the variation of sizes for stake pockets is a very harmless one, and my motion was that if pressed steel was used they should vary by half-inch size, and that the taper should be as recommended in the report. Now, that is a very harmless sort of thing. It does not commit us to anything. If we do not want to use pressed steel we are not going to use it. If we do want to use it, there will be an advantage in having had it graduated to half-inch sizes. Anybody who wants to go into the use of pressed steel can have the advantage of knowing what the Association would recommend, and therefore what the Association is likely to adopt in the future,

when this has reached the final form. It is a very harmless, innocent thing, and I think we would be perfectly safe in accepting it.

MR. CLOUD: I would like to call attention to one thing. If at this convention you could simply approve of the recommendations of the committee, and there stop, and not submit to letter ballot, it would form a basis and guide for anybody who wished to use these forms to follow, if they choose, and the adoption of anything in this connection by letter ballot could very properly be postponed until a future time. I only say this from my knowledge of the difficulty of presenting a thing of this kind to letter ballot, so as to get any results of value.

MR. E. CHAMBERLAIN: It has occurred to me that these innocent and harmless things sometimes prove to be exceedingly dangerous, and I earnestly support the suggestion of my friend on the left, that this be presented to letter ballot in some tangible form, accompanied by drawings. The same result could be reached as advocated by Mr. Wall, only to a greater degree.

MR. GRIEVES: It seems to me there is no one thing more important to the railroads of this country than a standard center plate, in the interchange of cars, and I think the sooner we get a standard center plate the better we will be able to facilitate business for our companies. The reason I asked Mr. Forsyth in regard to this center plate is, that I am not quite sure as to the shape given here being the correct form of center plate which should be used, on account of the different widths of iron bolsters, and of making the center plate to conform to the wooden bolster. It is going to be a very difficult matter to have a standard center plate, and I agree with Mr. Barr, that the center plate should be submitted, with drawings, so that we would know exactly what we are voting on.

MR. FORSYTH: I would explain, as the Secretary has already explained, that there are drawings now in his hands. In regard to the stake pocket, we thought that it would be sufficient if we secured uniformity in the size of it without complicating it with certain definite dimensions as to bolt holes, because I think anyone who had adopted any particular dimensions for bolt holes would oppose the question.

THE PRESIDENT: Mr. Secretary, will you state the motion?

MR. SCHROYER: Mr. President, we are not ready for the motion. We do not understand it. I would like to hear the motion read.

THE PRESIDENT: The better way is for gentlemen who have motions to make to put them in writing.

MR. WALL: Mr. President, owing to the obscurity that would exist with relation to the center plate, I would like to omit that from my motion, and leave it open. Therefore my motion will be changed to read:

*Resolved*, That when pressed steel is used, the sizes of the stake pocket at the top vary by one-half inch, and that the uniform taper in each direction shall be one-quarter inch in six inches.

Will the seconder of my original motion accept that?

MR. GRIEVES: I accept that.

MR. E. CHAMBERLAIN: Here is a patented device that Mr. Wall is making a recommendation upon. Isn't it better to have this go before the Executive Committee in the usual way and pass through the usual channel?

MR. WALL: It will have to be by the Constitution of the Association.

MR. WAITT: As I understand it, the motion is that the suggestion of the committee with reference to stake pockets be submitted to letter ballot. It seems to me that the general action of the Association in recommending standards has been with the idea of putting something before the railroads of the country that they could use and have uniformity, and which would be of some advantage to the roads in interchanging cars and making the repairs. I can see very little advantage to be gained from submitting the present question to the roads as a standard, even supposing it were adopted. We do have occasion many times to replace stake pockets which have been broken or torn off the cars. For that reason, it is very essential that the arrangement for fastening the stake pockets should go with the size or taper of the stake pockets before it is adopted as a standard. If we have a uniformity in the manner of fastening, as well as uniformity of size, it seems to me that we will then gain some advantage, and we will have a standard which can be used, and which will help us in repairing cars. As it stands now, I think we will gain nothing. We would be adopting a standard which would produce just as much diversity of practice as there is now. I should feel inclined to oppose having such a question submitted to letter ballot.

MR. WALL: My only object in submitting this question to letter ballot was on account of the recommendation of the committee. The

committee have evidently gone into this matter very carefully, and they have given us a good deal of valuable information. The matter is not in shape. The use of compressed steel has not progressed so far as to enable us to adopt any standard with reference to it that would be of any great advantage to us ; but the committee in making their recommendation that the stake pockets should vary in this way have, I believe, seen a number of different kinds of stake pockets, and they think it would be advantageous to have them vary in certain ways. They have followed certain lines so that, ultimately, if we do adopt a standard, we could adopt something already in use. I was prompted to make the motion more on account of courtesy to the committee, because they had made the recommendations, and because they had given us a good report, and it gave us an opportunity to show that we appreciated their work ; and by confining it in the language that is used, that is, when pressed steel is employed, I do not think it puts us in any shape where we are likely to be embarrassed. If we do not want to use pressed steel, we will not do it. If we do use it, we will try to make the dimensions vary in accordance with the recommendations of the committee.

MR. BARR : I felt that I paid the committee a very delicate little compliment that was not plain enough to be nauseating by asking that they should be continued on this quite important subject. I think they have done remarkably well, and I think they are just the men to go further with it. But we have been through this mill so often. We started on the Master Car-Builders' coupler, and it took us nearly five years before we got the tail and everything fixed up, and we have done so with a good many things. We have done it with the Christy brake shoe, and the executive committee found it necessary to make brass patterns that could be referred to as standard, and even then we did not get it right. Now, there is no use for this Association to repeat the mistake that they have made in former years. I believe that in order to establish a standard, complete drawings and complete models should be made and held in the custody of the Association as part of its archives, before attempting to adopt anything as standard, and I am satisfied that this committee can very readily give us drawings showing the size of U bolts and location of the holes. If there are two U bolts used we want to know whether they are to be four or five inches apart. It is an exceedingly important thing, because if you go half an inch away from it, you might as well not have a standard. It seems to me that the practice of this Association ought to be that

complete drawings and even models of any standard you choose to adopt should be made part of the archives of this Association before we submit anything to letter ballot.

MR. WAITT: I heartily agree with the remarks Mr. Barr has made with regard to standards, and in order that this motion may come in a little different way before the Association, and to avoid the dislike that I have, and I think some others have, to submitting it directly to letter ballot, I would amend the motion by leaving out the part where it refers to submitting to letter ballot, and substituting that the recommendation of the committee be adopted as the sense of this Association. That will be a due compliment to the committee. It will leave it still open for presenting in proper shape as a standard at some later time or by some later committee.

A MEMBER: I second that.

MR. WALL: I will accept that amendment if Mr. Grieves will.

MR. GRIEVES: I do not like that part of it. If that amendment is made, then railroads will go to work and make center plates by these drawings; then it will be accepted as a standard of the Association when it is not a standard.

MR. WAITT: I referred to the stake pocket.

MR. GRIEVES: I will accept the amendment as to stake pockets.

MR. E. CHAMBERLAIN: There seems to be a division as to whether it is better to pay a compliment to this committee or go ahead in the march of progress. This committee has been continued two or three years or longer, and they have made wonderful progress. There is no question about that. It seems to me that amendment retards it right here. I recollect very distinctly that the most of the committees that presented their reports this year were continued from last year. I don't know how many were continued from the year before.

MR. SCHROYER: Of the stake pockets that are on exhibition here, there are probably a dozen or fifteen patterns, any one of which will probably meet the requirements of the committee. Now then, what does this recommendation amount to, if we express our views here to the effect that pockets of these sizes in the openings should be used? I do not think it amounts to anything.

MR. WAITT: If I may be allowed to speak with regard to this subject once more, I would answer Mr. Schroyer by saying that I would make a subsequent motion recommending the appointment of

a committee to continue this subject and carry it along, which committee would know by our recommendations that they have a basis to start with as to the dimensions and the taper of the stake pocket.

MR. CLOUD: The motion now is that the recommendations of the committee in regard to stake pockets be approved as the sense of this convention.

THE PRESIDENT: All in favor of that will signify by saying ayé—contrary, no.

The division on the *viva voce* was so close that the President called for a rising vote, when 26 voted for and 11 against the motion.

THE PRESIDENT: Mr. Waitt's motion is carried.

MR. WAITT: Now, Mr. President, in order that we may have the matter in a more definite shape in another year to act upon as a standard, I would move that a committee be appointed to report at our next convention, recommending a standard for stake pockets and method of attaching to the cars.

MR. GRIEVES: Do you intend to embody center plates in that?

MR. WAITT: Just stake pockets; one thing at a time.

MR. GARSTANG: I second the motion.

MR. BISSELL: I move an amendment to include center plates, and having a center plate for a wooden transom, and a center plate for an iron transom, and have a standard for each, and have them interchangeable with each other so far as the working parts. This old committee have got so far along, and we think so much of them, that I am very certain that they will be appointed to continue the subject.

The amendment was accepted.

MR. WEST: It was stated recently that there were fifty-nine different patterns already in existence of pressed-steel center plates. I think we ought to take some steps toward adopting a standard.

MR. GRIEVES: Isn't it possible that this same committee could report on these standards at this same convention, so that they could be submitted to letter ballot?

MR. E. CHAMBERLAIN: I scarcely see how Mr. Bissell's motion could be carried out, and how they could prepare models and drawings.

MR. CLOUD: The motion, as it now stands amended, is that a committee be appointed to report at the next convention, recommending a standard for stake pockets and a method for attaching to the cars, also a standard for center plates showing one for iron transom and one for wooden transom; also that drawings and models be presented with the report.

THE PRESIDENT: Gentlemen, you have heard that motion. All in favor will signify by saying aye—contrary, no. The motion is carried.

Mr. Barr, are you ready to report on steam heating and ventilation of passenger cars?

Mr. Barr read the following report:

#### REPORT OF COMMITTEE ON STEAM HEATING AND VENTILATION OF PASSENGER EQUIPMENT CARS.

Such a radical change in the method of heating passenger cars as is implied in the substitution of steam for fire is one of such vast importance, both as to safety, comfort and economy, that prudence requires us to move with great caution and deliberation before going to wasteful and useless expense in equipping great numbers of cars with inferior and dangerous devices, without requisite time for experiment. Fortunately this subject is not a subject fraught with mystery of unknown possibility and mystified with doubt and speculation and intuitive guesses, but its principles are familiar to each and all of us, and this being the fact, it seems strange to many that it requires time to select and combine the acme of device without hesitation or delay; but experience has taught this organization, at least the older members, that much labor and much experiment has been necessary to produce acceptable devices for the various functions of car service. As steam heat has come to stay, and will not "down at our bidding," but rather is pushed forward by public sentiment and the strong hand of law, it behooves this body of men to create and combine such devices as will ensure both safety and economy in car heating. Although economy is secondary, it must and need not be ignored; but knowing that the mechanic is a "stickler" for the tangibility for actual performances, that one we must deal with here. So far as this committee has knowledge, heating cars by steam has been accomplished as follows:

*First.* What is termed and known as "Direct Steam," that is, steam passing direct from the train pipe through pipes arranged similar to Baker heater pipes, with which you are all familiar, the condensation passing off through a trap or waste cock located under the car. While this is undoubtedly the cheapest method of heating cars by steam, we found it very unsatisfactory to the passengers, there being either too much or too little heat, very difficult to regulate, and it did much damage at times in actually burning shoes, traveling bags, etc. This system will doubtless be extensively used on account of being so cheap and easy of appliance, but we do not consider it well adapted to heating parlor or sleeping cars.



*Second.* By the McElroy system (catalogue and full description furnished by the Consolidated Car Heating Company, Albany, New York), in connection with the Baker or similar heaters, leaving the heater intact, so that it could be used with fire, as originally designed, but using an attachment whereby the water in Baker heater pipes is warmed and circulated by an injection of steam into the water, the increase of water passing off through a trap or cock. This system has been applied to many cars and run with considerable success.

*Third.* There has been used with a good degree of success, a number of the New York Safety Heating devices, which is by circulation of water heated by jackets filled with steam through which the water passes. These jackets are placed one outside of the car and one inside, the condensation being carried out through a trap, the Baker heater being intact at all times, to use fire. Full description and details of device will be furnished by the Safety Car Heating & Lighting Company, 160 Broadway, New York.

*Fourth.* A device has been used in connection with the Baker heater, which consists of two small cylinders filled with copper tubes, enclosed in a strong wrought-iron case, the steam passing around the copper tubes, through which the water passes, and is heated. One of these cylinders is placed in the stove room, into which steam is carried. After passing through this cylinder the steam goes through a  $\frac{3}{4}$ -inch pipe to the other cylinder, which is placed in the opposite end of the car. All cylinders and cross-over pipes are kept inside of the car and above the top of the sills, leaving no pipes outside or under the car for loss of heat by outside radiation, except the train or service pipe, and four or five feet of steam pipe. In conveying the live steam from the stove room to the small cylinder in opposite end of car, the steam pipes are covered with asbestos and encased in another pipe for perfect safety from live steam, and to prevent too much radiation. A small drip cock is used to carry off condensed steam. For full description apply to the Leland Heater Company, 90 John street, New York.

From past experience the committee would recommend that the following general principles should be observed :

1. That all pipe as far as possible should be located inside the car.
2. That a uniform location should be adopted for the ends of the pipe between cars.
3. That a standard pipe union or corresponding device should be adopted for connecting the rubber hose with the train pipes.
4. That means for heating cars independently should be retained.

J. N. BARR,  
J. C. BARBER,  
W. H. LEWIS,  
T. A. BISSELL,  
J. W. MARDEN,  
*Committee.*

#### DISCUSSION.

MR. WALL : I move that the report be received and the committee continued.

MR. MCGEE : I second the motion.

The motion was carried.

MR. CLOUD: Perhaps it would be well to call attention to the recommendations here. There are four recommendations: First, that all pipes, so far as possible, should be located inside the car; second, that a uniform location should be adopted for the ends of the pipe between the cars; third, that a standard pipe union or corresponding device should be adopted for connecting a rubber hose to the train pipes; fourth, that means for heating cars independently should be retained.

MR. TOWNSEND: I move that the four recommendations be approved.

MR. MARTIN: I second the motion.

MR. PECK: Mr. President, they do not recommend any particular place for the pipe or any particular size.

THE PRESIDENT: I think that would be a difficult thing to do. There are so many tanks and one thing and another placed on the cars nowadays that it would be a pretty difficult matter.

MR. PECK: There could be a standard pipe adopted for the hose.

MR. BISSELL: We were not quite in time to get our drawings and everything arranged. There is a train pipe on all cars placed alike and having a union so that one can be removed and another kind put on in a very short time—taking sleeping cars, parlor cars or mail cars—that can be adjusted very easily. There is no difficulty there. But this is an omission on our part the same as it was on the part of the Steel Plate Committee in getting their drawings—something that we had not completed.

MR. WAITT: Is there a motion before us at present?

THE PRESIDENT: Yes, sir. A motion was made by Mr. Townsend and seconded by Mr. Martin that the recommendations of the committee be approved. All in favor of that motion will signify by saying aye—contrary, no. The motion is carried.

MR. WAITT: I would move that the committee, being still in office, be requested to present for the next convention a proposed standard for location of the end of the pipe and standard connection between the hose and the pipe, which I think will be something we could with good results adopt.

MR. CASANAVE: I second the motion.

MR. WAITT: We have a standard size adopted by letter ballot last year. But it may be a union, it may be a coupling, it may be just an elbow.

MR. CLOUD: You do not mean a standard coupling, but a standard connection between the hose and the pipe?

MR. WAITT: Between the hose and the pipe, a standard for connecting, so that when a hose is removed or there happens to be a different kind used on another road, we would know what kind of fitting to put on.

Mr. Waitt's motion was carried.

On motion of Mr. Barr, the convention adjourned until Wednesday at 10 A.M.

### WEDNESDAY'S SESSION.

President Kirby called the convention to order at 10:15 A.M.

THE PRESIDENT: Mr. Cloud has thought best to call the names of those who did not answer to their names yesterday.

Mr. Cloud called the roll.

THE PRESIDENT: The Secretary has a few announcements to make this morning before we commence the Rules of Interchange.

MR. CLOUD: I have a letter here from the World's Columbian Exposition, with which was transmitted some printed matter that you will find on the table in the rear; also a telegram from Mr. George S. Miles, of the Columbian Exposition, of Chicago, who expected to be here, and who says that an expression of views from this Association in regard to the Exposition would be appreciated. I have also an announcement to make for Mr. Sutherland. It says a meeting of the representatives of the various roads over which the cars belonging to the Wagner Company run, will be held in the reception room of the hotel at 6 o'clock this afternoon, for the purpose of revising and adding to the rules adopted at the previous meeting.

The Gold Heater Company wish to have it announced that there are two D. L. & W. cars at the West Jersey depot, equipped with the Gold system of steam heating. Members desiring to see this would be welcome there at 4 o'clock this afternoon, or at any other hour they might fix. They desire that members should go as nearly as possible in a body.

THE PRESIDENT: Gentlemen, is it your pleasure that we take any action on the telegram from the World's Fair officers or any of these announcements?

MR. WALL: Mr. President, I would move that a committee be appointed to prepare a resolution with reference to the World's Columbian Exposition, to be submitted to this body.

The motion was seconded by Mr. Rhodes and carried.

THE PRESIDENT: I will appoint as the members of that committee, Mr. Wall, Mr. Barber and Mr. Lentz; the committee to report tomorrow.

The special order of business this morning is the Rules of Interchange.

MR. ADAMS: Before we proceed with the consideration of the Rules of Interchange, I would like to say that I was appointed yesterday as chairman of the Committee on Subjects. I have thought the thing over considerably, and I have made up my mind that there are others far better qualified to look after that matter than myself, and I would like to be excused.

MR. E. CHAMBERLAIN: As a member of that committee, and as one of the members who depends largely on Mr. Adams' judgment in the selection of the subjects for debate, I trust that the Chair will not see fit to excuse Mr. Adams.

MR. ADAMS: One word additional to that. Mr. Chamberlain must recollect that I am getting to be somewhat older than the rest of you. There are a lot of young men here who want to be brought into the service, and I would very much rather give way to them. I am willing to assist in any way that I can, but as to serving on that committee, I would rather be excused.

THE PRESIDENT: If there are no objections, we will excuse Mr. Adams. I would like to have Mr. Adams serve on that committee for the reason stated by Mr. Chamberlain, but as there are four other members of that committee besides Mr. Adams, that will be enough. We will excuse Mr. Adams.

MR. CHAMBERLAIN: In the order of names, whose name comes next on that committee?

MR. CLOUD: Mr. Chamberlain comes next in order.

THE PRESIDENT: Gentlemen, we are prepared now to take up the Rules of Interchange. Mr. Grieves having been accustomed to

preside at meetings, especially for the revision of the Rules of Interchange, I will ask him to preside at this meeting, if there is no objection.

Mr. Grieves took the chair, and the convention proceeded with the revision of the rules of the Rules of Interchange until 2 P. M., when an adjournment was taken until the following day.

The report of the Arbitration Committee was read and considered in connection with the revision of the Rules of Interchange, and the decisions of the Arbitration Committee since the last convention were approved as rendered.

#### THURSDAY'S SESSION.

The convention was called to order at 10:10 A. M.

THE PRESIDENT: I would like to call your attention, gentlemen, to paragraph 11 of the By-laws, which reads as follows:

No member shall speak more than twice in the discussion of any question until all the other members who want to speak and have not been heard, have spoken.

The first business in order will be the report from the Nominating Committee.

MR. CLOUD read the following report:

#### REPORT OF THE NOMINATING COMMITTEE.

*To the Officers and Members of the Master Car-Builders' Association:*

Your committee appointed for the purpose of nominating officers for the ensuing year beg leave to submit the following report:

For President, John Kirby; First Vice-President, E. W. Grieves; Second Vice-President, John S. Lentz; Third Vice-President, T. A. Bissell; Executive Committee members, R. C. Blackall, E. Chamberlain, F. D. Casanave; Treasurer, G. W. Demarest.

W. F. TURREFF,  
ROLLIN H. WILBUR,  
BENJAMIN WELCH,  
WILLIAM MCWOOD,  
E. B. WALL,

*Committee.*

THE PRESIDENT: Mr. Wallis, of the Pennsylvania Railroad, wishes to make an announcement.

MR. WALLIS: I beg to say to the members of the Master Car-Builders' Association, that the West Jersey Railroad will be very glad to place a special train at their disposal either to-morrow or on Saturday, for any excursion over its line which they may wish to make, and if

they decide on an excursion and will let me know in the course of the day I will be glad to make the arrangements for it. (Applause.)

MR. CLOUD : The report of the Auditing Committee has just been handed in, which says :

The Auditing Committee have examined the accounts of the Secretary and Treasurer and have found them correct.

(Signed)

E. D. BRONNER,  
E. D. NELSON,  
GODFREY W. RHODES.

THE PRESIDENT : Gentlemen, we did not make as good progress yesterday as we might have done, I think, and our business will hold us here today and tomorrow, if we do not have two sessions today. Now it is with you to decide whether we shall hold two sessions today and get through, or continue until about two o'clock and then hold another session tomorrow.

MR. BLACKALL : I move that we have two sessions today, adjourning at one and meeting again at three this afternoon.

The motion was carried.

THE PRESIDENT : Now we will resume our business where we left off yesterday — the consideration of the Rules of Interchange.

Mr. Grieves took the chair and consideration of the Rules of Interchange was resumed.

After the revision of the rules was completed, President Kirby took the chair, and Mr. Wall submitted the following resolution respecting the World's Fair.

*Resolved*, That the Master Car-Builders' Association in convention assembled, does heartily endorse the World's Columbian Exposition of 1893, as an undertaking intimately connected with this Association, inasmuch as it is due to the labor and ingenuity of the American car-builder that the holding of this Exposition at an inland city has been made both possible and desirable. Therefore in consideration of this fact it should be the pleasant duty of every car-builder to give his earnest coöperation to secure the success of an enterprise so creditable to this country.

(Applause.)

The report is signed by Edward B. Wall, John S. Lentz and J. C. Barber.

A MEMBER : I move that the report of the committee be adopted.

MR. SCHROYER : I would second that motion, and I would also say in seconding the motion that I certainly should like to have seen

something embodied in these resolutions asking the Fair Commissioners to set aside a department for the display of cars and car equipments.

MR. WALL: I believe that has already been provided for by them.

The resolution was adopted.

THE PRESIDENT: Is the Committee on Wheel Guarantee ready to report?

MR. HENNESSEY: The Secretary will read the report, and also a communication from the wheel manufacturers which I received after the session was called to order.

THE PRESIDENT: Is it the desire of the Association to have the Secretary read that report of the Wheel Committee?

MR. HENNESSEY: I move that the Secretary read the report.

THE PRESIDENT: I did not know, inasmuch as the report has been placed in the hands of the members, but that we could dispense with the reading of it.

The Secretary read the report, as follows:

#### REPORT OF COMMITTEE ON WHEEL GUARANTEE.

*To the President and Members, Master Car-Builders' Association:*

Your committee appointed to consider the report of the meeting of the Association of Manufacturers of Chilled Car Wheels, held November 21, 1889, at New York City, reports as follows:

The only material point of discrepancy between what appears to be the desire of the wheel manufacturers and the provisions of the specifications for cast-iron car wheels adopted by the Master Car-Builders' Association, is given in the second article of their resolutions, which reads as follows:

"That when wheels are taken out of service on account of sharp flanges, flat spots, comby or shelled-out treads, or for cracked brackets or plates, and it is found on breaking up the wheels that the depth and character of the chill and the strength and character of the metal in the plates are up to the standard specifications adopted by the Joint Conference Committee of the American Railway Master Mechanics', the Master Car-Builders' and the Wheel-Makers' Associations, it shall be considered that the failure is due to the service and not to the quality of the wheel, and that the wheel maker ought not to be called upon in such cases to pay for or replace any such wheels."

It will be seen from this that all wheels with sharp flanges, flat spots, comby or shelled-out treads, or with cracked brackets or plates shall be broken, and if they meet the specifications as to breakage and character of metal called for by the Master Car-Builders' specifications, the wheel makers shall not then be held responsible for the replacement of such wheels.

This proviso is in the first place indefinite, and in the second place would virtually put the wheel makers in position that they could under its provisions refuse to replace any wheels.

I.—As to sharp flanges: A careful observation of this phenomenon shows that, in ninety-nine cases out of a hundred, one wheel has a sharp flange, while its mate wheel on the same axle has a flange which is almost as good as the day it was placed in service, showing that there has been a tendency in the pair of wheels mentioned for the wheel with the sharp flange to run all the time against the rail. The causes of this tendency are as follows:

1. Wheels may vary in size on the same axle.
2. The trucks may be out of square.
3. One wheel may wear faster than the other, the fastest wearing wheel always running to the flange.

1. In our opinion mismating at the present day is a very rare occurrence.
2. As to the trucks being out of square, our observations would imply that this cause is not active in producing worn flanges, and if it were, one of the principal reasons for believing this is that in this case the worn flange on one pair of wheels would certainly produce a worn flange on the other pair of wheels in the same truck, and we feel safe in saying that we do not find this correspondence; one pair of wheels very often having a very badly worn flange, while the other pair of wheels in the same truck shows no perceptible wear on the flange.

3. In our opinion the third cause, that is, the difference in the wearing qualities of the two wheels on the same axle, is the cause of nearly all flange wear, and for this cause the wheel makers should certainly be held responsible. To sum up the matter of sharp flanges, if mismating can be shown, or if the wheels are not pressed on to an equal distance from the journal, the wheel maker should not be held responsible for worn flanges, but that for all other causes of worn flanges the wheel maker is in all justice responsible.

II.—As to flat spots, we presume that the term "flat spots" does not include flat from sliding, as there is no question on that point, but that by the term "flat spots" is meant wheels having spots on them which have been worn through the chill or white iron. We cannot understand how, under any circumstances, the wheel maker should ask to be relieved from responsibility for this defect, and we cannot see either how an inspection of the wheel by breakage should relieve him of responsibility, because an inspection would show that on this spot the proper depth of white iron did not exist as called for in the specifications. If such a proper depth of white iron existed, the wheel would not wear flat.

III.—As to comby or shelled-out treads, these defects are entirely due to the quality of the wheel, and are not caused under any circumstances by improper treatment of the railroads, and it seems to us that there can be no question as to the responsibility of the wheel makers for such defects.

IV.—As to cracked brackets or plates, these defects are caused either by brittleness in the iron or by improper design of the pattern. Railroads expect to buy wheels which are properly designed, and are made of material which will not crack in the plates or in the brackets, and the percentage of such failures in good wheels demonstrates to every railroad man that wheels can be made practically free from



such defects, and should be so made, and any encouragement to wheel makers to run the risk of making wheels with such defects would be very detrimental to the railroad interests. It is true that on railroads with very heavy grades, the failures from cracked brackets or cracks in the hollow where the single and double plates unite are very serious, but with good wheels it is safe to say that for every one wheel that fails in this way, twenty pass the ordeal successfully and fail from finally wearing out, and we do not feel that we could recommend that railroad companies should recede in any way from their rigid requirements in this respect.

The wheel makers, by the terms of the specifications, are formally relieved from responsibility for flat by sliding, chipped flange, broken flange, if such defect is not caused by seams worn through chill or worn flange, broken or chipped rim, not caused by rim being hollow, and breakages of any kind caused by wreck or derailment; they now ask practically to be relieved from sharp flanges, flat spots, comby or shelled-out treads and cracked brackets and plates.

As far as our knowledge goes, there is only one other defect from which they can ask to be relieved, and that is seams in the tread, a defect of remarkably rare occurrence. It might possibly be fair to divide with wheel makers in the matter of sharp flanges, holding them responsible for one-half, the railroads being responsible for the other half, for wheels failing in this way, but it is our opinion that this really would be a more liberal allowance than justice could demand.

J. J. HENNESSEY,  
THOMAS SUTHERLAND,  
*Committee.*

The Secretary also read the following communication in connection with the report.

CAPE MAY, June 9, 1891.

*J. J. Hennessey, Esq., Chairman Master Car-Builders' Committee:*

DEAR SIR,—No conference having been held between your committee and that of the Car-Wheel Makers' Association, by which an exchange of views on the subject of "guarantee" was had prior to making your report, we would ask you to present the following resolution:

*Resolved,* That the committee be continued, with directions to report again at the next annual meeting of this Association.

Yours respectfully,

WM. W. SNOW.  
N. S. BOUTON,  
JOHN R. WHITNEY,  
GEO. B. SWETT,  
SIDNEY P. ENSIGN,

*Committee of the Wheel Makers' Association.*

MR. CASANAVE: I move that the very able report presented by the committee be received, and the committee continued, as recommended by the wheel manufacturers.

The motion was seconded by Mr. Schroyer, and carried.

THE PRESIDENT: I would now call for the report of the Committee on Brake Shoes.

Mr. Godfrey W. Rhodes presented the following report:

# REPORT OF THE COMMITTEE ON METAL FOR BRAKE SHOES.

*To the President and Members Master Car-Builders' Association.*

In reporting last year on the preliminary tests that your Committee on Metafor Brake Shoes had made under what was termed shop or laboratory tests, the opinion was expressed that these shop tests should be confirmed by a series of road tests. Further investigations have convinced your committee that accurate conclusions from the shop tests would not be warranted without the road tests. Unfortunately, however, these road tests cannot be carried to a successful and conclusive finish without the expenditure of considerable time and money. Apparatus will be required for accurately weighing the wear of not only the shoes but the mounted wheels, an expert force of assistants would be required to make observations during the tests and work up the conclusions; in short, the tests would necessarily be of a somewhat similar character to that of the Burlington brake tests. While it is true one or two of the Western lines offered your committee facilities for carrying out the tests, we have not felt justified in asking for its renewal this year.

As the expense connected with a series of road tests, such as the subject under consideration would call for, cannot very well be provided for except by some action of the managers of the lines represented in the Association, it is with regret that your committee feel they cannot complete their investigations, and are obliged to ask to be discharged.

G. W. RHODES,  
E. B. WALL,  
*Committee.*

MR. BLACKALL: I move that the report be received and the committee discharged.

The motion was seconded and carried.

Mr. Rhodes then read the following supplemental report on behalf of the committee:

It will doubtless appear to most of you that something more might have been said on so important a subject as "Best Metal for Brake Shoes." We will not go into the full details of the train of circumstances which led to our failure to present a report. Suffice it to say that it is covered by the three words—*want of facilities*. We can, however, give in an informal way some of the indications that our shop or laboratory investigations point to, and perhaps by so doing the railroads we represent will be better able to determine whether they will be warranted in encouraging and contributing to further investigation of the subject.

We hardly know how to express our disappointment at not being able to make the road tests. The investigations in the laboratory, however, have been quite extensive, as some of you are aware, and we might present to you many figures and diagrams, but at best such information can only be speculative and would convey no idea of the length of a stop that a train would make at a given speed with shoes of

different metals, the wear of the wheel or the wear of the shoe. If you will allow our digressing a little we will even go so far as to say that such information would be listened to as heedlessly as is the escaping steam from the pop valves of locomotives throughout the country on many lines today. Have you not frequently seen engines arriving at stations or waiting at passing tracks with their pops blowing off full blast until they start up again and with seldom any criticism or even notice from those in authority? Now could we picture to ourselves a man or a boy having succeeded in getting on to the tanks of these engines wantonly pitching off coal the size of a hen's egg at the rate of one lump every second, how differently the situation would appear! There is not a man in this room but would at once cry out against such a waste! Even those not connected with railways would frown down on this condition of affairs. Yet careful investigations well known to railroad men have shown that the waste in each case is the same. We might cite other instances illustrating the importance of looking at subjects requiring investigation from various aspects, but perhaps what we have said will be sufficient to bring out the point we wish to make, namely, that in the consideration of this brake-shoe question road tests verifying the shop tests are necessary not only before we can place any dependence on what the shop tests apparently indicate but before we can thoroughly appreciate their real significance.

We have here some tables and diagrams worked out by the Chicago, Burlington & Quincy Engineer of Tests, Mr. F. W. Sargeant, in connection with some committee work for the Chicago, Burlington & Quincy Master Mechanics' Association. The deductions are taken from a miniature brake shoe 4 inches long by 1 inch wide, placed on a chilled cast iron wheel  $11\frac{1}{2}$  inches diameter, which was applied to a Thurston oil testing machine. The load on the shoe was 100 pounds per square inch. Suitable connections for weighing the load, and the tangential pull of the shoe, or friction, were also provided. The time of each run was ten minutes. Observations were recorded each minute. A photograph of the apparatus appeared (May, 1890) in several of the technical papers with a full description. We present the results from six different shoes in Figs. 1 to 6.

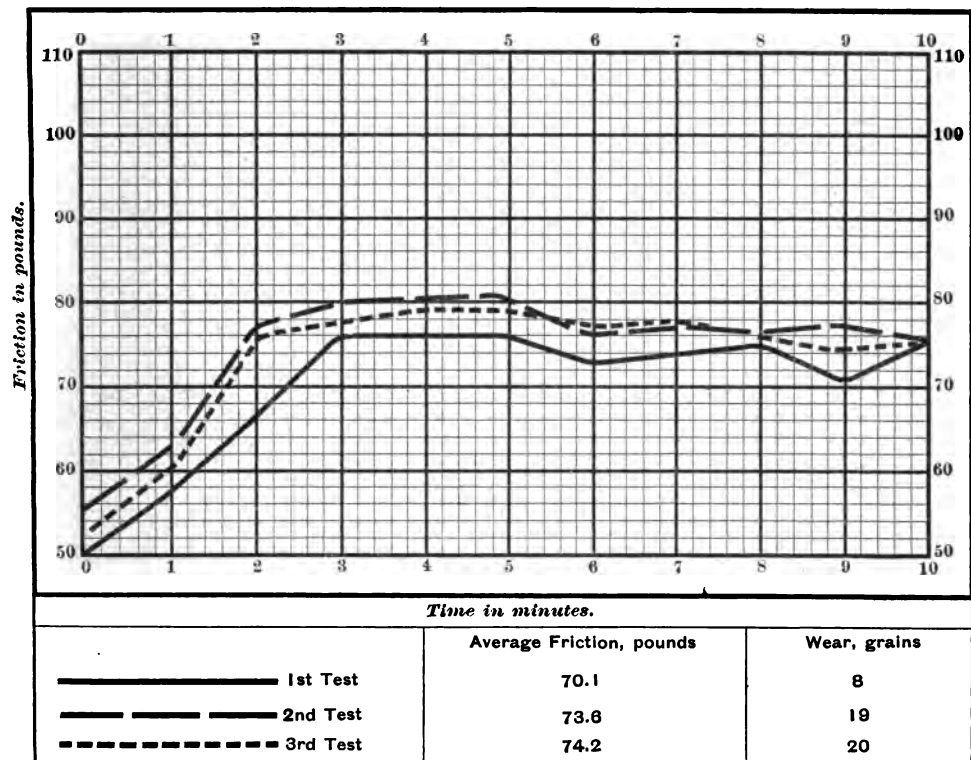


FIG. 1.

No. 1 for wear. No. 4 for friction.

Hard case-iron shoe on chilled wheel.

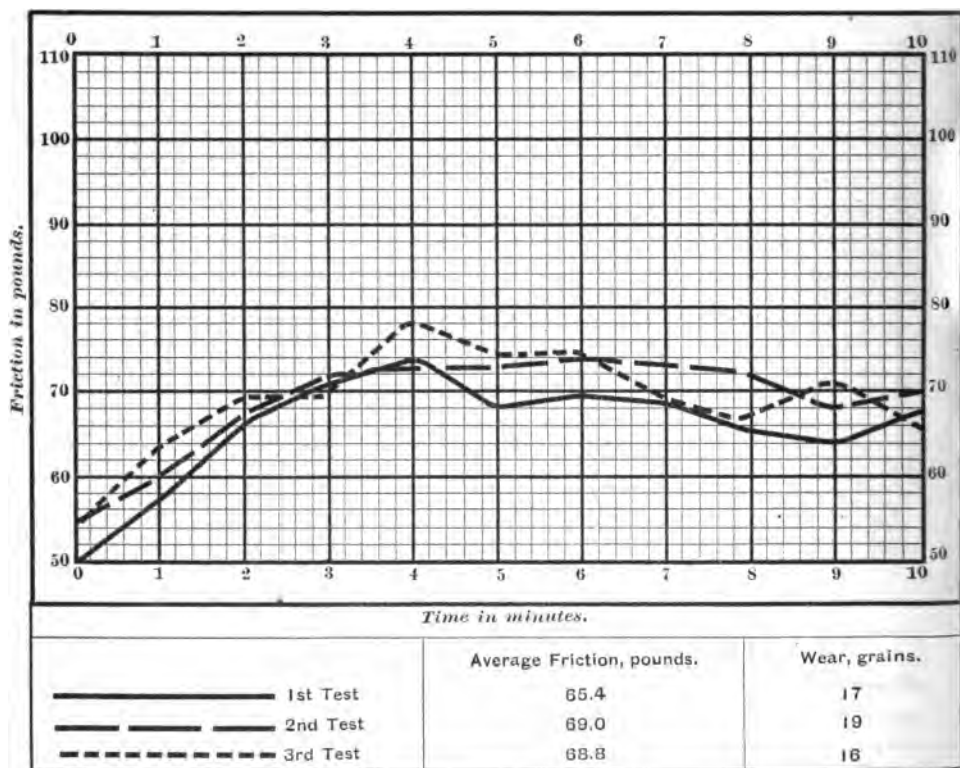


FIG. 2.

No. 2 for wear. No. 6 for friction.  
Malleable-iron shoe on chilled wheel.

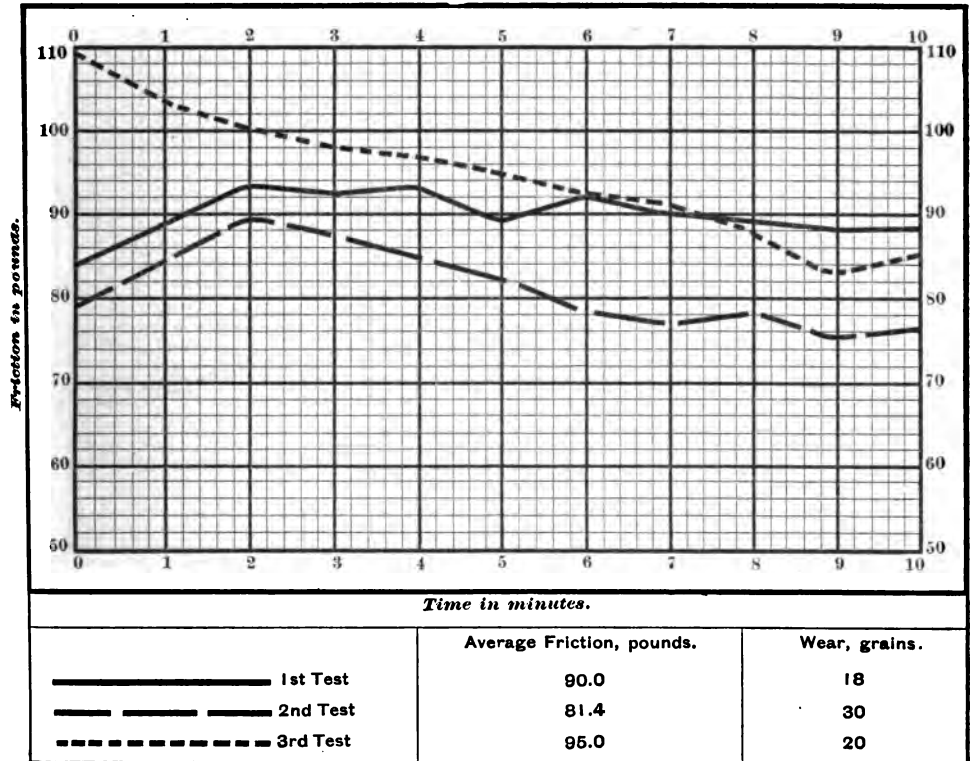


FIG. 3.

No. 3 for wear. No. 1 for friction.

Wrought-iron shoe on chilled wheel. Fiber in shoe parallel with tread.

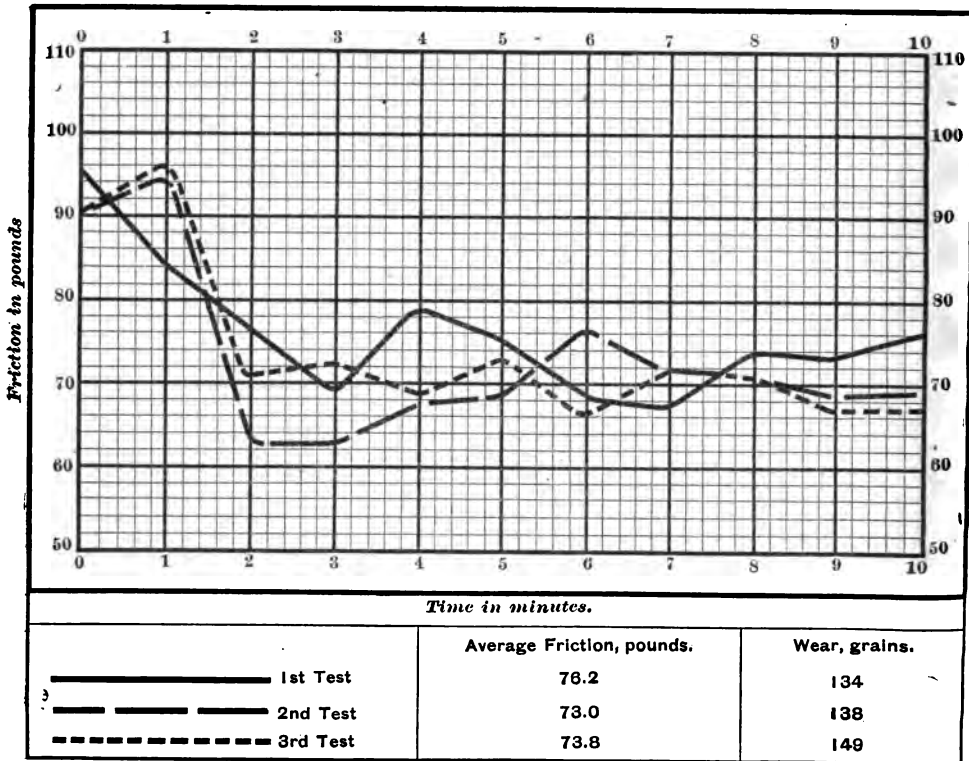


FIG. 4.

No. 4 for wear. No. 3 for friction.  
Medium cast-iron shoe on chilled wheel.

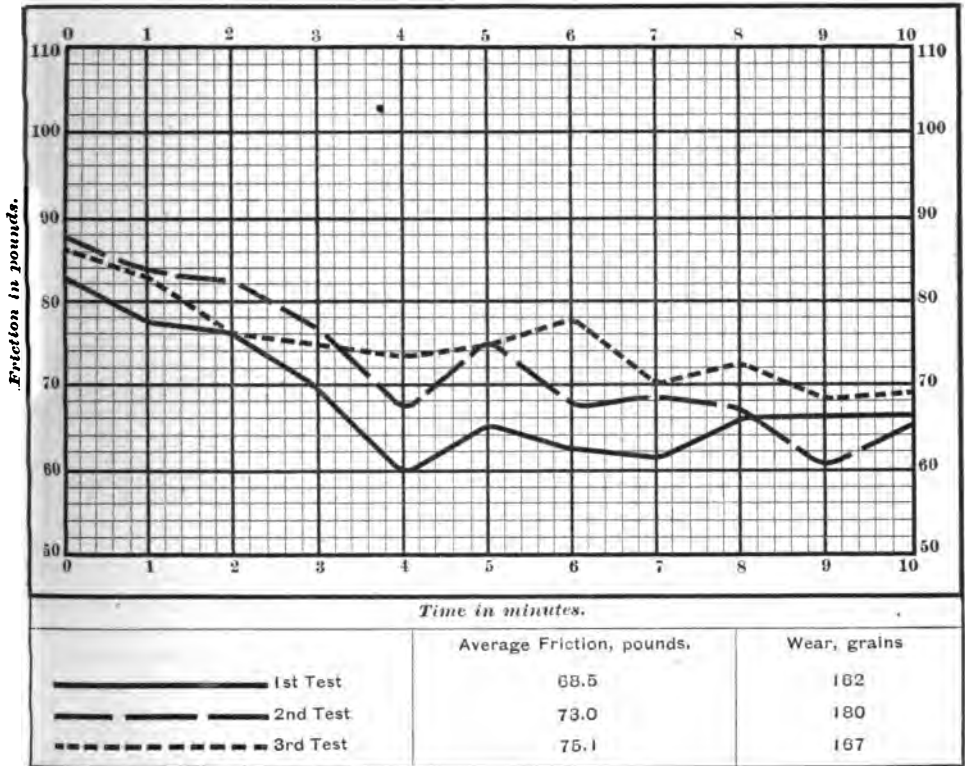


FIG. 5.

No. 5 for wear. No. 5 for friction.  
Grooved cast-iron shoe on chilled wheel.



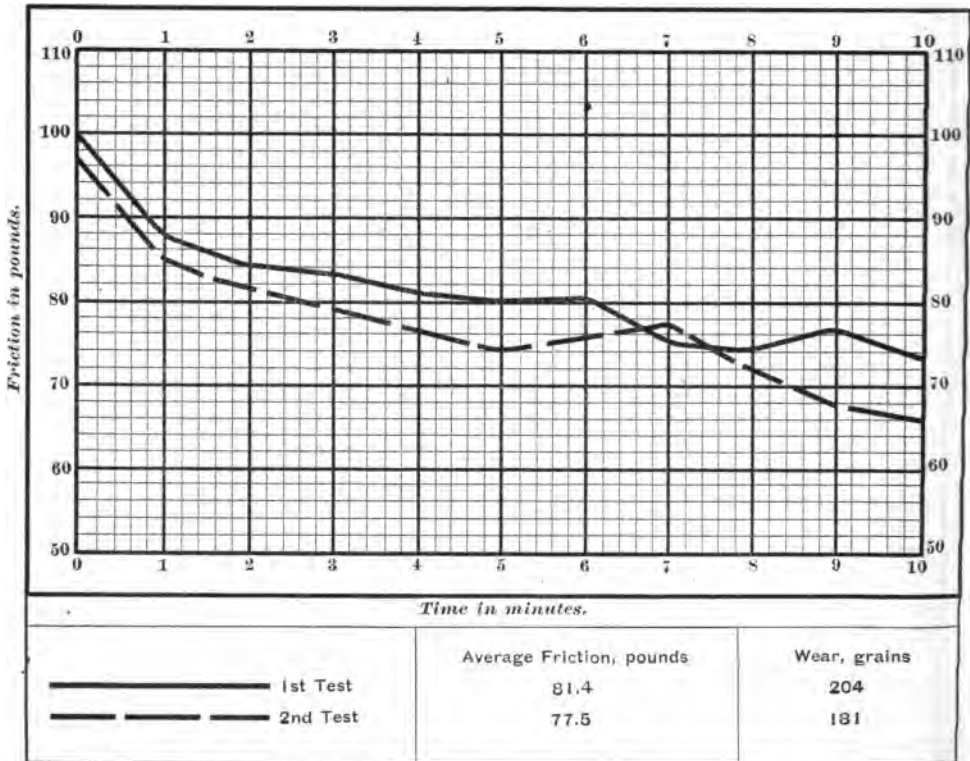


FIG. 6.

No. 6 for wear. No. 2 for friction.  
Soft cast-iron shoe on chilled wheel.

On statement below we have classified the different metals in their order of wear. The shoe showing the least wear is numbered 1, and that showing the greatest is numbered 6.

- No. Kind of Material.
- 1 Hard cast iron.
  - 2 Malleable iron.
  - 3 Wrought iron.
  - 4 Medium cast iron.
  - 5 Soft cast iron (grooved).
  - 6 Soft cast iron.

On the following statement, in like manner, the shoes are classified in their order of superiority as regards friction, which, of course, must be regarded as the most important factor in this question.

- No. Kind of Material.
- 1 Wrought iron.
  - 2 Soft cast iron.
  - 3 Medium cast iron.
  - 4 Hard cast iron.
  - 5 Soft cast iron (grooved).
  - 6 Malleable iron.

Referring now to diagrams Figs. 1 to 6: The wrought-iron shoe shows the greatest friction. It will be observed that in the first two tests it does not reach the maximum friction until the second minute of the test, or until the iron has become well heated. The soft cast iron starts in at a very high pull, namely, 100 pounds, dropping rapidly the first minute and during the balance of the test showing a fairly regular pull. It would seem that after the first minute the soft particles of iron become broken off and roll over the surface of the shoe, producing a comparatively uniform friction.

With the medium hard iron we get a peculiar diagram, rising in friction for the first minute from 90 pounds to 95 pounds, and in the second minute falling off rapidly to about 65 and 70 pounds, when it continues giving a fairly uniform friction for the rest of the test.

The cast shoe with grooves was intended to see what effect the dropping away of the particles of iron would have. The diagram, however, does not show any very marked difference from soft cast iron, except less friction throughout.

In the hard cast iron diagram we find the friction very low at the commencement of the test, namely, 50 to 55 pounds, reaching its maximum, namely, about 80 pounds at the third minute, and then giving a fairly uniform friction during the remainder of the test. The malleable iron shoe produces much the same diagram but requires four minutes before the maximum pull is reached.

Our experiments, you should understand, were not confined to these six shoes but for obvious reasons we have thought it best to confine our remarks to them.

Similar tests were made with a number of different shoes against an 11½-inch steel-tired wheel, but with in most cases quite different friction and wearing results. In fact of late the wearing effect of certain metals and combination of metals against steel tires has become so well recognized that we find several forms of shoes now on the market appropriately known as tire dressers.

While recognizing the caution that should be used in drawing inferences from such few and incomplete tests, we would say that from the different tests made the indications are that the shoes now on the market produce little wear on chilled surfaces, some not any. It is likely that tests for longer runs than we could give would show wear, especially with plain wrought iron. Our laboratory tests, however, showed no chill wear. In the selection of shoes, then, for chilled wheels, the chief points to be considered appear to be:

- 1st. The friction produced by the shoe.
- 2d. The wear of the shoe.
- 3d. The cost of the shoe.

The same three elements would also enter into the consideration of this subject when used against a steel-tired wheel with the addition of the wear of the tire by its contact with some of the forms of shoe.

In conclusion we hope, now that you have before you an outlined consideration of this brake-shoe question, that those railroads which, through their representatives, still feel an interest in the topic and further information, will procure some of the different shoes now on the market in order that they make the practical service tests, which we feel this paper is so sadly deficient in.

G. W. RHODES.

E. B. WALL.

#### DISCUSSION.

MR. RHODES: In calling this hard cast iron I do not want it understood that it is chilled cast iron. It is ordinary casting such as we get at our car shops. In the fifth, we have soft cast iron grooved. We observed that the friction remained highest at the start of the pull and did not drop until we got rid of the rolling particles. It was thought that by putting grooves through the shoe we might get rid of the rolling particles and the same characteristics are noticeable which appear in the other soft iron tests. But you will see that we did not accomplish anything. The same fall occurs and at the expense of friction. There is less metal there to rub against and less friction. No. 6 shows the tests made of malleable iron. It shows the same feature as the hard cast iron — that it does not begin to have much friction until it gets hot, and after that the friction is heavy.

MR. BISSELL: Is not that the best way to brake? Is it not best to start with a low friction instead of having great friction at the start?

MR. RHODES: That is a matter for speculation. I would prefer a brake which would rather lose its friction by continued application; that would start in very high and then rather lose friction as the speed falls off. In this case the friction, you will observe, in place of being up to 70, 80 and 90, as we have at the start of the series, has got down to an average of 65, 69 and 68, and the wear is 17, 19 and 16 grains.

We kept up during these tests a uniform speed equal to twenty miles to the hour. Our experiments, you understand, were not confined to these six shoes. The same pressure was kept on each shoe.

MR. BISSELL: I would move that a vote of thanks of this convention be tendered to this committee that has devoted so much labor and time and some money to these experiments, and I think that under Mr. Rhodes' supervision the committee should be continued. There are a number of points to be settled about this brake-shoe question, and one of the important ones is the form of the shoe. First, I would move that a vote of thanks be given.

The motion was seconded and carried.

MR. BARR: This is not a small subject, and as we have got into this thing I would make a motion that the committee be reappointed.

The motion was seconded.

THE PRESIDENT: It is moved and seconded —

MR. RHODES: May I say something on that question first? It seems to me that this action of reappointing committees gets into a good deal of the shape that we had yesterday. It is done out of compliment more than anything else. We have got on our road a Master Mechanics' Association, and they have had different committees appointed at different times and they have gotten into just the same way that the Master Car-Builders' is getting into of reappointing and reappointing them; and at last we found that we were carrying some seven or eight committees who practically were doing nothing. They had exhausted their resources and their subjects had become stale, and we found that the best way was to drop a subject for a while, and after the members have taken the question up and looked into it further and made further investigations, we get new material and bring about a more intelligent report eventually. At the present time what we had hoped was that in place of confining it to some two or three on a committee to do the work, that the members would make some investigations, and perhaps in a year from now it will be found that a very much better committee can be got together — a committee that can do more work than will be done by simply continuing the old one. I had hoped that the present committee would be relieved, at any rate, for a year, and let the Association do something. I had another suggestion to make. It puts a committee in an awkward position to ask them to do work and not furnish them with the means and the appliances. It is like asking a man to build a house and telling him to go

and get his own tools and men and money and material. I have thought of a method which might get this into better shape. We have now the General Time Convention and that is growing into an association which is taking up questions which we have taken up. At the present time they have a committee on safety appliances. Now if the investigations that may be made on this subject during the coming year develop enough to demonstrate that in order to have the perfection in our safety appliances it is essential to use certain grades of material for shoes, why not let them take this up and delegate the subordinates on their lines to make these investigations. That would at once give us authority for an expenditure which some of us do not feel like undertaking, and it would get it so that each would bear his proportion of the expense. I had hoped very much that this committee would be discharged and left off this year at least and let the Association at large do something on this question, and get their managers to take it up so that they will have the authority for the expenditures.

MR. BARR: I believe this is important enough to say a few more words on. If we discharge this committee and depend on the Association to do something and get us some little more information by next time, we will not get it. The only question is, is this important enough to take up some of the time of the convention at the next meeting? I believe that it is. This committee has settled a good many points which take a good deal of time to settle and another committee would have to go through the same thing to settle those points, because we cannot know what the committee talked over, and a great many things they have done do not come to the surface, and even if they made an elaborate report which showed everything they had done and seen, there is not another committee that could take up and utilize that information as well as this committee. My feeling is that this is important enough to come before the next convention, and I think this committee is better qualified to do it than any other would be.

The motion to reappoint the committee was carried.

MR. FORSYTH: I would like to call the attention of the Association to the fact that one of the members of this committee will not be with us, and I move that Mr. Barr be added to the committee in place of Mr. Verbryck.

The motion was seconded and carried.

THE PRESIDENT: The next work before us will be to hear the report of the Committee on Joint Car Inspection.

Mr. Waitt read the following report from the Committee on Joint Car Inspection :

#### REPORT OF COMMITTEE ON JOINT INSPECTION

*To the President and Members, Master Car-Builders' Association :*

Your committee appointed to consider the subject of "Joint Inspection at Interchange Points," would respectfully submit the following report :

It has been frequently remarked, with much truth, in times past, by General Managers and General Superintendents, that the heads of car departments do not consider the interests of any other department of the road except their own, in the inspection and interchange of cars. This state of affairs may still exist to some extent, but an evidence of the rapid decrease of such sentiments and practice is seen by the great strides which are being made by joint inspection in superseding the old system of straight or individual inspection. In these days of low rates and sharp competition, it becomes a matter of vital importance to any and all roads to do everything consistent with safety to accept and despatch loaded cars.

Your committee has endeavored, in the recommendations which it will make, to still more further the interests of the traffic and operating departments of the roads, and, at the same time, furnish proper protection to the interests of the car departments.

In a report read in May, 1890, to the Central Railway Club, the following eight requirements are set forth as being necessary in a theoretically perfect inspection and interchange of cars :

- 1st: Avoidance of delays to freight.
- 2d: Assurance of safety of cars to trainmen, and good running condition.
- 3d: Just placing of responsibility for defects on cars.
- 4th: Avoidance of disputes.
- 5th: Avoidance of transfer of freight.
- 6th: Avoidance of setting out cars from trains, or setting back cars.
- 7th: Economy of service.
- 8th: Uniformity of inspection at different points.

All efforts made by our respective roads in the direction of revision of Master Car-Builders' Interchange Rules, and of changes from individual inspection to joint inspection, and from one system of joint inspection to another, seem to be made in order to accomplish, as nearly as possible, the above results. From the answers to the circulars of inquiry sent out by this committee, it is found that the various systems of joint inspection in use on the roads represented by this Association for points where there are more than two inspectors required, may be classified into three distinct systems :

1. Where the inspection is in charge of a chief joint inspector, who hires such inspectors to do the work as he may deem necessary, the men being paid pro rata by the roads in the joint inspection, the chief joint inspector having entire charge of the inspectors, hiring and discharging them, and keeping their time.

2. Where each road hires and instructs its own inspectors, the inspectors taking their orders from their respective car foremen, the joint inspector acting merely as an arbitrator, to settle disputes.

3. Where each road hires its own inspectors and places them, in all matters pertaining to inspection of interchange cars, in charge of a chief joint inspector, who is held entirely responsible for the inspection at that point. The inspectors to be subject to their respective car foremen to do repair or other work, when not inspecting for interchange.

It will be generally agreed that there is no system of inspection which is better calculated to assure a thorough examination of cars, and thereby safety to trainmen and good running condition, than the old system of individual inspection by each road, regardless of the others.

In view of this fact, it seems to your committee, and is borne out by the replies received, that the nearer we can remain to individual inspection, and yet avoid the delays and disputes which constantly arise, where each road inspects for itself, regardless of the others, the more perfect will be the system.

In considering the comparative advantages of the three systems mentioned, in the light of the eight requirements given above, systems No. 1 and No. 3 seem to meet all the requirements. System No. 2 meets all but one. It does nothing toward securing uniformity. Under this system, a car which will pass the inspection of one of the roads will not, or may not, be accepted by another, as the matter of a standard for inspection is left for each car foreman to decide for himself, regardless of any other road. As the joint inspector has no authority except to settle any disputed point between two car foremen, any carelessness or excessive rigidity on the part of the inspectors of one road cannot be corrected, and the system has nothing in it to cause any constantly growing improvement. In view of the above facts, your committee does not advise the adoption of this system.

In comparing systems No. 1 and No. 3, we must look at them in the light of what we have previously said, that the greatest safety to trainmen, and best assurance of good running condition of cars, is gained by keeping as closely to the old individual inspection as possible. It must be conceded that, with inspectors, if a man feels he is working for, and is paid by one road, he will be more careful of the interests of that particular road than if he is paid equally by two or more roads. This being the case, it is clear that the interests of the individual roads are better subserved by each road hiring and discharging its own inspectors; but in order to avoid disputes and obtain absolute uniformity of inspection by all roads in the joint inspection, all the inspectors should be governed, as to their interpretations of the Master Car-Builders' Rules, by the instructions of one man, the chief joint inspector, as is done in system No. 3. This system also admits of the men being subject to their car foremen, to do repairs or other work when not occupied in the work of interchange inspection.

The circumstances and conditions attending the interchange of cars are so varied at different points, that any code of rules which might be formed for governing the inspection, would need to be considerably modified to suit the different conditions. At many points, the inspection tracks for all the roads are located at points quite a long distance from each other, so that the cars are handled by switch engines for

some miles after the inspection, before the cars are actually delivered, to be taken by the receiving road's engines. In cases of this kind it becomes an absolute necessity to have a double inspection of all such cars, as much damage may be done between the first inspection point and the final delivery track, and in order to insure safety to trainmen and good running condition, the cars must have a second inspection. It might be asked, why not have the inspection given after final delivery the only one? If this were done, in many localities it would be found frequently necessary to cut out and set back cars for transfer, which had been damaged prior to their arrival off the road. There is also a very great advantage in having a second inspection. It not only acts as a safeguard and check on the first inspection, but it enables the joint inspector to note the efficiency of the men who are doing the inspecting. If the second inspector discovers a defective car which has passed the first inspection, he reports the fact to the chief joint inspector, who has information then to censure the first inspector if, in his judgment, he was guilty of neglect or carelessness. In this way the men soon feel that if they are careless or neglectful, it will be known; as a result of this, there will be developed a constantly improved service; also, the chief joint inspector soon becomes aware of any incompetency of his men, which, without this check, he could not know for a much longer time.

At many points, the work is such that the regular men who do the interchange inspection; can look over the cars in their yards, going both ways. At other points, where the business is too heavy, one additional man can do this work and more than earn his salary by the saving he will make.

Your committee would recommend, in the matter of a system of inspection for interchange points where there is a large interchange by two or more roads, the adoption of the following system of joint inspection and form of joint agreement and code of rules:

#### SYSTEM OF JOINT INSPECTION.

Each road to hire its own inspectors, and to place them, in all matters pertaining to inspection of interchange cars, in charge of a chief joint inspector, who shall be held entirely responsible for the inspection at that point. The inspectors to be subject to their respective car foremen to do repair or other work, when not inspecting for interchange.

#### JOINT INSPECTION AGREEMENT

##### BETWEEN THE

.....*Railway Companies at*.....

\* For the purpose of facilitating the interchange of cars between the above named roads at ....., it is agreed between the undersigned, on behalf of the above roads:

1st. There shall be appointed, at a joint meeting of the representatives of each of the above roads, a chief joint inspector (and ..... assistants and clerk, if necessary), whose duty it shall be to see that all cars received or delivered by each company respectively, are carefully and impartially inspected, and the decision of the chief joint inspector (or his assistants) as to the fitness of a car to run, shall be final and binding on each company.



2d. Questions as to liability for repairs shall be decided by the chief joint inspector (or his assistants), subject to the following Article :

3d. Any road being a party to this Agreement, may appeal from the decision of the chief joint inspector (or assistants) to a committee, who shall be agreed upon annually by the heads of the car departments of the roads who are parties to this Agreement. The decisions of the committee shall be final and binding, and their decisions shall govern the chief joint inspector (and assistants) in his future action.

4th. Each company to repair the cars belonging to its own line, either at its own expense, if it be shown that the damage occurred prior to the delivery to the other line, or at the expense of one of the other companies, if the damages occurred while in the possession of the other line; but in order to prevent delays, all cars will be received by each of the companies when not in good order but safe to run, but a Master Car-Builders' defect card shall be applied, covering the defects, by the chief joint inspector (or assistants).

5th. Should a car be received which requires light repairs, such work will be done by the company having possession of the car at the time, and the chief joint inspector (or his assistants) shall issue a Master Car-Builders' defect card, covering the defects, chargeable to the road which is responsible for the repairs.

6th. The chief joint inspector (or assistant) shall be the umpire as to the decisions of the several local joint inspectors in the joint inspection, and his judgment in all matters involved shall be final and binding on all the local joint inspectors, subject only to the provisions made in Article No. 3.

7th. Local joint inspectors, when not occupied in the inspection of interchange cars, or duties pertaining thereto, shall be subject to the car foremen in the yards where they are located, and shall do such work as they shall be directed to do, in oiling, inspecting or repairs, provided that such work shall not be allowed to interfere with their work in the joint inspection.

#### RULES GOVERNING THE JOINT CAR INSPECTION

##### BETWEEN THE

.....*Railway Companies at*.....

1st. Cars are to be inspected and claims made in accordance with the Master Car-Builders' Rules of Interchange.

2d. The chief joint inspector (and his assistants) shall have entire charge of the inspectors in the different yards in all matters pertaining to the inspection and interchange of cars between the roads which are parties to this Agreement, and the inspectors will receive orders only from the chief joint inspector (or assistants) in such matters.

The chief joint inspector (or assistants) shall decide all questions arising between inspectors as to the fitness of a car to run, as to liability for repairs, and carding for defects, and his decision shall be final and binding, except as provided in Article No. 3 of the attached Agreement.

The chief joint inspector (or assistant) is expected to see that the inspection is done promptly and satisfactorily.

3d. Inspectors are not permitted to set back a bad order car to the delivering road, no matter what its condition, but such car must be held for the chief joint inspector's (or assistant's) inspection and decision.

In case of a car in bad order or needing repairs being overlooked at the inspection before delivery, and the car is delivered, the said car may be disposed of by the decision of the chief joint inspector (or assistants).

4th. Cars must not be transferred on account of defects, except by order of the chief joint inspector (or assistants).

5th. The chief joint inspector (or assistants) shall visit the delivering and receiving points of each road at least once each day, or oftener if possible, and he must personally inspect any bad order cars for which claims have been made, or about which disputes have arisen, and decide the points involved.

6th. The chief joint inspector shall be governed by any special rules issued by any of the roads parties to this Agreement, after having given a ten days' notice of such special rule to the heads of the car departments of each of the companies who are parties to this Agreement.

7th. These Rules may be amended from time to time, by mutual agreement of the heads of the car departments of the roads who are parties to this Agreement.

Your committee would recommend that at inspection points where there is only work enough for one man for each road, that the inspection be done by the two men jointly, cars going both ways to be inspected by both men at the same time.

Your committee would further call attention to the need of closer personal attention by heads of car departments to the classes of defects received and delivered and carded for at interchange points, and we firmly believe that a closer contact of the heads of the departments with the joint inspectors would be productive of great good. As it is impossible for these inspection points to be frequently visited, we would strongly recommend a system of weekly reports on proper blanks for that purpose, showing the numbers and initials of cars passing the inspection points, with statement of material defects, the report to show what these defects were, and whether cars were carded for them, repaired or transferred. By studying a regular report of this kind the errors of judgment in inspectors can be soon seen and corrected, to say nothing of the moral effect had upon men when they know their actions and works are to be examined somewhat in detail by their superior officers. Your committee would submit here two forms for weekly reports from joint inspection points, which they would recommend to be adopted as standard.

## JOINT INSPECTION.

Report of Defective Cars RECEIVED from Connecting Lines

during the week ending.....189....., at.....Yard.

.....Chief Joint Inspector.

Car No.	CAR INITIALS.		Date.	DEFECTS.	Defects, old or new.	RECEIVED from	PASSED.				Transfer Order.
	Owners.	Line.					Re- paired	Card- ed.	Card- ed by	Nota- tion.	

## JOINT INSPECTION.

Report of Defective Cars DELIVERED to Connecting Lines

during the week ending.....189....., at.....Yard.

.....Chief Joint Inspector.

Car No.	CAR INITIALS.		Date.	DEFECTS.	Defects, old or new.	DELIVERED to	PASSED.				Transfer Order.
	Owners.	Line.					Re- paired	Card- ed.	Card- ed by	Nota- tion.	

We would also recommend the adoption of a standard joint inspection defect card, similar to that given below; this to be generally used in place of the great variety of styles now in use, some of which differ materially from a Master Car-Builders' defect card. This card, it will be noticed, has two stubs, one to be retained by the chief joint inspector and the other to be sent at once to the road against which the card is made out.

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known that our present rules admit of this practice, but it is required only to a very limited extent, and, as a result, many cars received from the home road with old defects and no cards, cause much delay and disputing when offered for interchange in the same condition at some point considerably removed from the home road. All this indicates that a large part of our troubles originate from the lack of uniformity in the standard of inspection at different points, and the greatest problem your committee have to deal with is to be able to make recommendations which will bring about, in some certain manner, a greater uniformity of inspection. We believe that in no way can this be done more surely and quickly at a junction point of two or more roads than by the adoption of the rules and system of joint inspection recommended above. But this does not go far enough, as we must extend our uniformity to points far removed from each other. Various suggestions have at times been made to this end, but from the views expressed in the communications received by your committee, there would seem to be almost a unanimous opinion that, considering the class of men which, on account of the wages paid, we are obliged to depend upon for inspectors, a clear and concise interpretation of the Master Car-Builders' Rules will be of incalculable value in furnishing a means of obtaining greater uniformity in the inspection and passing of cars. We, would, therefore, recommend the appointment of a committee of seven to prepare and present, to be acted upon at our next convention, sets of interpretations, accompanied by cuts illustrating the same, covering the principal defects met with in common practice in connection with Rules No. 3 to No. 10 inclusive, to include in such interpretations the limits to which the more common defects may exist and be considered safe to run, also to classify all kinds of defects for which owners should be responsible.

In conclusion, your committee would summarize their recommendations:

1. The adoption of a standard system of joint inspection, with Form of Agreement and Rules governing same, as submitted above, the same to be submitted to letter ballot.
2. The adoption of a standard form of weekly report of defective cars received and delivered at joint inspection points, the same to be submitted to letter ballot.
3. The adoption of a standard joint inspection defect card, as recommended, the same to be submitted to letter ballot.
4. That at inspection points where there is one man for each road the inspectors should work jointly. That is, the inspectors of the delivering and receiving roads should inspect together all cars interchanged between them.
5. The appointment of a committee of seven, to prepare a supplementary set of interpretations and illustrations of the Master Car-Builders' Rules, to report to the next annual convention.

Respectfully submitted,

A. M. WAITT,  
H. C. MCCARTY,  
H. MIDDLETON,  
WM. GARSTANG,  
SAM'L IRVIN,

*Committee.*

## DISCUSSION.

MR. CASANAVE: I would move that the recommendations of the committee as suggested in paragraphs 1, 2 and 3, for the adoption of a standard system of joint inspection, etc., be submitted to letter ballot; also that the committee's report be received.

The motion was seconded.

THE PRESIDENT: It is moved that the committee's report be received. What will you do with the committee, discharge them?

MR. CASANAVE: Discharge them. I think this work is well done, Mr. President.

THE PRESIDENT: It is moved that the report be received and the committee discharged and that Sections 1, 2 and 3 be submitted to letter ballot.

The motion was carried.

THE PRESIDENT: What will you do with recommendations 4 and 5?

MR. MACKENZIE: I do not believe it is necessary to take any action on Section 4. For Section 5 I move that a committee of seven be appointed by the chair.

The motion was carried.

MR. CASANAVE: Inasmuch as the substance of Section 4 is included in the other paragraphs in the general plan of inspection, it does not seem to be necessary. If the whole of the recommendations of the committee are adopted and submitted to letter ballot, what is in this paragraph will be included in the rest.

THE PRESIDENT: The next report we will consider is that of the Committee on Air-Brake Standards and Care of Air Brakes on Freight Cars. Is that committee ready to report?

MR. LENTZ read the following report:

REPORT OF COMMITTEE ON AIR-BRAKE STANDARDS AND INSPECTION AND CARE OF AIR BRAKES ON FREIGHT CARS.

*To the President and Members of the Master Car-Builders' Association:*

In preparing a system of rules for the guidance of employes in the operation and maintenance of the air brake, it became apparent to your committee, at its first meeting, that the care of the air-brake apparatus upon locomotives and upon cars could not be separated, but must be considered as a whole. In view of this condition, the American Association of Railway Master Mechanics appointed a committee, consisting of Messrs. Blackall, Stevens and Clark, to act jointly with your committee in the preparation of such a system of instructions and examination of employes, as to their duties in connection with the air-brake apparatus.

All the subsequent deliberations of the committee, and the material and recommendations of this report, are thus due to the joint action of these two committees.

In order to ascertain to what extent the standards, heretofore adopted by the Master Car-Builders' Association, referring to the application of the air brake to freight equipment, were being used, and to ascertain if any alterations or changes in such already adopted standards were desirable, the committee sent out a circular letter of inquiry to the representatives of the different railroads, and the statistics obtained from the replies will be found in appended statement.

In addition to the replies, as shown in this statement, several others were received from roads which had no air-brake equipment coming under the conditions to which the inquiries point, and which merely gave an opinion as to the desirability of the use of an iron brake beam in connection with air brakes. These replies have, therefore, not been included in the table.

It will be observed that since the adoption of the standards for freight-car brake gear two years ago, and up to about the 1st of March last, the roads mentioned in this table have applied the air brake, with substantially the apparatus adopted as standard by the Association, to 38,342 freight cars, and of these 38,342 freight cars, 21,084 were also equipped with the metallic brake beam.

In reply to the inquiry as to whether any form of wooden brake beam can be made to properly serve the purpose with the use of the air brake there are 20 replies in the negative and 9 in the affirmative.

In reply to the question as to whether an iron brake beam is essential to the successful operation of the freight brake there are 20 replies in the affirmative; three that owing to practical difficulties in the way of the use of a suitably constructed wooden beam the iron beam is practically necessary, and six that an iron beam is not essential.

It will thus be seen that of those who consider that a wooden beam may be so constructed that it will give a satisfactory service, a portion believe that it is more desirable to use a metallic beam.

Upon investigation, therefore, of the use which has been made of the existing standards, and in the absence of any criticism as to the effectiveness of the same, your committee finds no recommendation to make, in reference to any alterations in existing standards.

The attention of the committee has been called to some errors in the drawings, accompanying the published proceedings of the Association. One of these errors refers to the placing of the brake staff upon the wrong side of the car, and the other has reference to the bracket for the dummy coupling, in which the distance from the lower end to the center of hole for securing the dummy, is given as  $2\frac{1}{8}$  instead of  $1\frac{1}{2}$  inch, as it should be. The committee has rectified these errors.

In view, however, of such investigation as the committee has been able to make, and the very generally expressed sentiment that the most effective operation of the air brake can only be secured through the use of an iron brake beam, your committee would recommend and urge the application of an iron or metallic brake beam, conforming to the requirements already specified and adopted by this Association, in all cases where the air brake is applied.

In considering the question of interchange rules, as applied to the air-brake apparatus, it appeared very essential to your committee that a uniform system of inspection and care of brakes, as well as a uniform system of operating the same, should be adopted upon all roads.

To secure this result, your committee has prepared and presents to you herewith, to be issued in a form considered suitable for general distribution among employes, a code of rules to govern all employes of railroads who are concerned in any way with the operation, inspection or maintenance of the air-brake apparatus. It is prefaced by some general instructions, which are offered as a suggestion to general managers and other executive officials, to whom the responsibility of issuing the books would fall, and by whom they should be signed. Following are instructions to enginemen, trainmen, engine-house foremen and car inspectors.

Considerable care has been given to make these instructions applicable to all conditions under which railroads in different portions of the country are operated, and it is believed by your committee that to secure thorough and uniform efficiency in the operation and maintenance of the air brake, such a system of rules, issued under the authority of each company, is necessary. To promote familiarity with the duties devolving upon each class of employes, and to insure the possession of suitable knowledge by each, the committee has recommended, in its proposed general instructions, the examination of each employe in such duties as fall to him; and to insure the uniform instruction of employes upon all roads, the committee has prepared a system of questions and answers to cover the examination of all employes, which accompanies the rules, and which the committee recommends be printed with, and form a part of, the book of rules—the whole to be printed by this Association and sold to the railroads, in the same way that the Rules of Interchange are.

The adoption of rules of interchange of freight cars, applying to the air-brake apparatus, has been the subject of investigation, as thorough as possible, by your committee. It seems quite apparent that the time has arrived when some action must be taken by the Association in this important matter.

In offering the amendments below to the Master Car-Builders' Code of Rules for Interchange, your committee has not recommended any particular method of testing the air-brake apparatus. There seem to be two methods by which such tests may be made, one being the use of a stationary plant at interchange points, consisting of air pumping machinery, storage reservoirs, and a system of pipes throughout the yards, with local connection for the testing of cars at different points. The other method is the equipment of all locomotives used in switching with the air-brake apparatus, and the testing of the brakes upon cars by attaching the switching locomotive thereto. There are reasons to be given in favor of each method, and your committee does not feel warranted in undertaking to decide this question at the present time, although it would suggest that the use of switching engines for this purpose appears to be the most feasible.

The question of making charges for material and labor, in maintaining the efficiency of the air-brake apparatus upon freight cars, has not been incorporated in the rules recommended.



On the one hand, there is a large number of roads, which have not yet commenced the equipment of their freight cars with the air brake, which would be required by the rules recommended to maintain the brakes upon cars of foreign roads in good order while upon their lines, and it would, at the first glance, seem that such roads should be reimbursed for any outlay in the keeping up of the apparatus. Upon the other hand, however, it is an almost universal practice now for railroads to equip all new freight engines with the air-brake apparatus, and a large number of roads which have not already begun to equip their freight cars with the air brake, have their locomotives equipped to operate the air brake upon such foreign cars as may be in their trains, and are making a regular practice of so doing. If those roads having no freight brakes upon their cars receive foreign cars with the air-brake apparatus in good order, they can make use of them upon their own line, and should be responsible for the care of them as much as if they were their own; and, as they are only required to deliver the cars with the air-brake apparatus in as good order as that in which they received it, there will be comparatively little expense to them in caring for it, unless they make use of it while on their own lines.

Your committee therefore believes that no charge to the owner of the car should be made for cleaning and oiling of the cylinder or triple valve, or the keeping of the brake shoe slack in adjustment, any more than should be made for the oiling and care of journals upon axles, and it is recommended that the owner be only charged for the replacing of brake shoes which have become worn beyond the limit specified in the rules.

In conclusion your committee offers the following resolution :

*Resolved*, That the Master Car Builders' Code of Rules of Interchange be amended by the addition, as an Appendix, of the following rule :

SECTION 1. In delivering freight cars equipped with air brakes at interchange points, the air-brake apparatus must be in good working order, and any car may be rejected by the receiving road if the air-brake apparatus upon it is defective in any respect. To determine whether the air-brake apparatus is in good order, its operation must be tested under the full working air pressure of 70 pounds per square inch, at the delivery point, by the delivering road, and under the supervision of, or to the satisfaction of, the inspector of the receiving road.

The conditions constituting good order shall be as follows :

- (1) The cylinder must have been cleaned, and the triple valve cleaned and oiled, within six months, and the date of the last cleaning and oiling marked upon the brake cylinder.
- (2) The cylinder must have been oiled within three months, and the date of the last oiling marked upon the cylinder.
- (3) The brake-shoe slack must be so adjusted that under the full application of the brake the piston travels not less than four nor more than eight inches.
- (4) The brake must apply and release promptly with proper handling by the engineer's valve.
- (5) The triple valve and auxiliary reservoir must be free from water.
- (6) The air pipes and all connections thereto must be free from leaks, and the pipes properly secured to the car body so that injury shall not occur to the apparatus nor leaks be produced by shaking and vibration of the pipe.

(7) The air-brake hose, when not coupled with that of another car, must be properly secured in the dummy coupling.

(8) The brake shoes must all be at least three-eighths inch thick at the center.

(9) All parts of the brake rigging must be sound and efficient, and in accordance with Rule 3, Section S of the Master Car-Builders' Code.

SECTION 2. A car having a defect in the brake apparatus may be received with a defect card for the same, provided that the defect be of such a nature that it shall not interfere with the operation of the hand brake upon that car, nor with the operation of the air brake upon any other car of the train.

April 16, 1891.

JOHN S. LENTZ,  
WM. TURREFF,  
N. W. SAMPLE,  
*Committee.*

# STATISTICS FROM REPLIES TO CIRCULAR LETTER.

Name of road.	No. of freight cars with M. C. B. brake gear.	No. of freight cars with M. C. B. brake gear and iron brake beams.	No. of freight cars with iron brake beams and other brake gear than M. C. B.	Can good results be secured with the use of wooden brake beams?	Is an iron beam necessary to secure the best results?
Mich. Cent. ....	600	600	....	No	Yes
C., C. C. & St. L. ....	1,600	1,100	....	No	Yes
Ohio & Miss. ....	....	....	1,471	No	Yes
B. & A. ....	300	300	....	No	Yes
B. C. R. & N. ....	....	....	200	No	Yes
D., S. Sh. & Atl. ....	83	....	....	Yes	No
Pa. Co. ....	4,522	3,000	....	No	Yes
N. P. ....	6,500	....	....	No	Yes
B. & O. ....	500	500	....	No	Yes
C., B. & Q. ....	4,498	4,498	....	No	Yes
C. & O. ....	1,600	1,000	....	Yes	Yes
L. S. & M. So. ....	200	200	....	Yes	No
C., B. & N. ....	....	....	1,500	No	Yes
Wabash ....	500	....	....	Yes	No
U. P. ....	3,065	....	....	No	Yes
C. & W. M. ....	200	200	....	No	Yes
K. C., Ft. S. & M. ....	400	400	250	Yes	No
St. L., A. & T. H. ....	....	....	80	No	Yes
H. & Tex. Ctl. ....	550	....	....	Yes	No
P. & R. ....	141	....	....	No	Yes
Cent. Vt. ....	850	....	....	Yes	Yes
Int. & Grt. N. ....	....	....	1,400	No	Yes
D. & R. G. ....	....	....	102	Yes	No
Chi. & Alton ....	450	450	25	No	Yes
C., R. I. & P. ....	3,000	3,000	....	No	Yes
R. & D. ....	3,478	2,971	....	No	Yes
C. M. & St. P. ....	1,413	1,413	150	Yes	Yes
Pa. Co. (S. W. Sys) ....	1,452	1,452	....	No	Yes
Lehigh Valley ....	2,500	....	....	No	Yes
	38,342	21,084	5,178		

## INSTRUCTIONS FOR THE OPERATION AND MAINTENANCE OF THE WESTINGHOUSE AIR BRAKE AND TRAIN SIGNAL.

### GENERAL INSTRUCTIONS.

The following rules and instructions are issued for the government of all employes of the railroad whose duties bring them in contact with the maintenance or operation of the Westinghouse air brake and train air signal. They must be obeyed in all respects, as employes will be held responsible for the observance of the same, as strictly as for the performance of any other duty.

Every employé, whose duties are connected in any way with the operation of the air brake, will be examined as to his qualification for such duties by the Inspector of Air Brakes or other person appointed by the proper authority. Every such employé will be required to have in his possession a certificate of competency to perform those duties, which will be given him only after having passed a satisfactory examination.

The Westinghouse Air Brake Company has issued, in convenient form, a complete explanation of all parts of the air brake and train air signal equipment, with directions for the care and operation of the same. Any employé of this railroad will be furnished with a copy of the same, upon application at place designated by special notice, and every employé will be held responsible for a full knowledge of his duties in the operation or maintenance of the air brake or signal equipment. If the directions contained in that book are observed and the rules and instructions herewith are obeyed, no failure of the air brake, at the time when it is needed, should occur. If such a failure does occur, it will be assumed that some employé has neglected his duty, and an investigation will be made to ascertain who is responsible for such failure.

SIGNED.....

### INSTRUCTIONS TO ENGINEMEN.

**GENERAL.**—Engineers, when taking their locomotives, must see that the air-brake apparatus on locomotive and tender, is in good working order; that the air pump and lubricator work properly; that the pump regulator stops the pump when the maximum train pipe pressure of seventy (70) pounds is obtained; that an excess pressure of not less than twenty pounds is maintained in the main reservoir when the handle of the engineer's brake valve is placed in position 2 (Running Position); that the engineer's brake valve works properly in all different positions of the handle; and that, when the brakes are fully applied, the driver brake pistons do not travel less than  $\frac{1}{3}$  nor more than  $\frac{2}{3}$  of their stroke, and the tender brake piston does not travel less than four nor more than eight inches.

Engineers must report to roundhouse foreman, at the end of the run, any defect in the air brake or signal apparatus discovered on the road.

**MAKING UP TRAINS AND TESTING BRAKES.**—Be sure to have 70 pounds train pipe pressure on the engine, with the handle of the engineer's valve standing in position 2, before connecting to the train.

When coupled to the train and the black pointer of the air gauge has become stationary or begun to rise a little, place the handle in position 3 and note whether the black pointer remains stationary or falls back. If the pointer falls back, it indicates a leak in the train apparatus, and the rapidity with which the pressure falls indicates

the extent of the leak. No train must be started out with a serious leak in the pipe or apparatus.

After the engineer is satisfied that there are no serious leaks in the train, he will, at a signal from the inspector or trainmen, apply the brakes and leave them so applied until the brakes on the entire train have been inspected and the signal is given to release. He shall then release the brakes, and shall not leave the station until it has been ascertained that all brakes are released and he has been informed by the inspector or conductor that the brakes operate all right. Where the train air signal is used, the

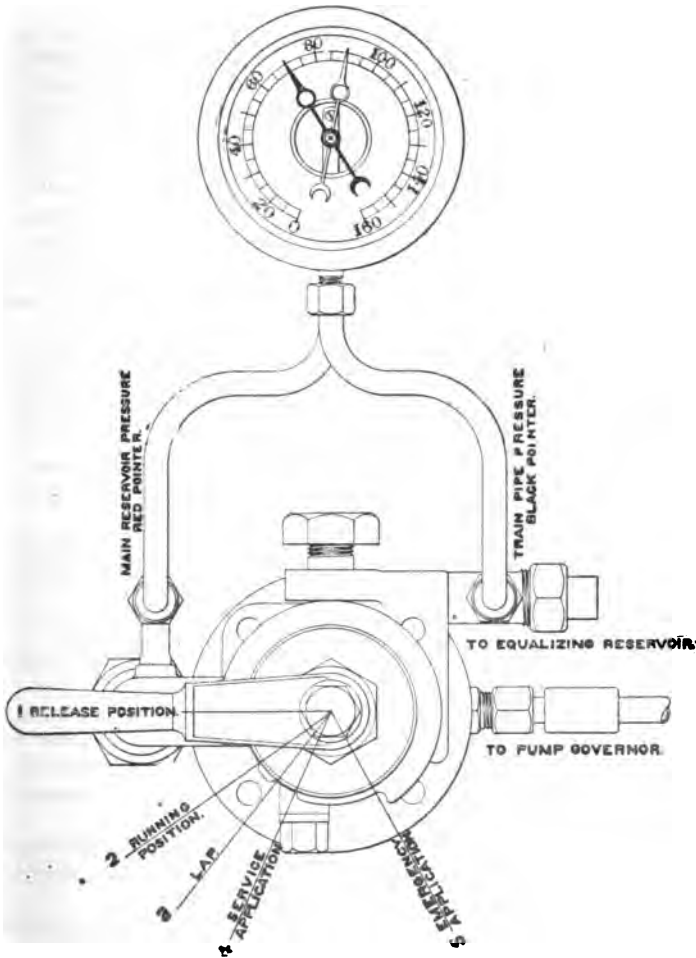


FIG. 1.

THE ENGINEER'S BRAKE AND EQUALIZING DISCHARGE VALVE AND DUPLEX AIR GAUGE.

signal to release the brakes, in testing, will be given from the rear car of the train, to show that the signal connections have been properly made.

**SERVICE APPLICATION.**—In applying the brakes to steady the train upon descending grades, or for reducing the speed for any purpose, be very careful not to make too great a reduction of pressure in the outset, as the speed of the train will be too quickly or too much checked, and it will be necessary to release the brakes and apply them again later, perhaps repeating the operation. APPLY THE BRAKES LIGHTLY AT A SUFFICIENT DISTANCE FROM THE STOPPING POINT, AND INCREASE THE BRAKING FORCE GRADUALLY, AS IS FOUND NECESSARY, SO AS TO MAKE THE STOP WITH ONE APPLICATION, OR AT MOST TWO APPLICATIONS OF THE BRAKES.

With freight trains which are only partially equipped with the air brake, great care must be used to apply the brakes with only from six to eight pounds reduction, and to allow the slack of the train to be taken up before further application is made, in order to prevent shocks, which otherwise might be serious.

In make a service stop, ALWAYS RELEASE THE BRAKES A SHORT DISTANCE BEFORE COMING TO A DEAD STOP, except on heavy grades, to prevent shocks at the instant of stopping. Even on moderate grades, it is best to do this, and then, after release, to apply the brakes lightly, to prevent the train starting, so that when ready to start, the release will take place quickly.

**EMERGENCY APPLICATIONS.**—The emergency application of the brakes must not be used, except in actual emergencies.

**BRAKES APPLIED FROM AN UNKNOWN CAUSE.**—If it is found that the train is dragging at any time without a rapid fall of the black pointer, move the handle of the engineer's valve into the full release position for a few seconds, and then return it to the running position.

If, however, the brakes go on suddenly, with a fall of the black pointer, it is evidence that (a) a conductor's valve has been opened, (b) a hose has burst or other serious leak has occurred, or (c) the train has parted.

In such an event, place the handle immediately in position 3, to prevent the escape of air from the main reservoir, and leave it there until the train has stopped, the brake apparatus has been examined and a signal to release is given.

**BRAKING BY HAND.**—NEVER USE THE AIR BRAKE when it is known that the trainmen are operating the brakes of the air-brake cars by hand, as there is danger of injury to the trainmen by so doing.

**CUTTING OUT BRAKES.**—THE DRIVER AND TENDER BRAKES MUST ALWAYS BE USED AUTOMATICALLY AT EVERY APPLICATION OF THE TRAIN BRAKES, unless defective—except upon such grades as shall be designated by special instructions; in which cases, the driver brake shall be cut out and used separately as a straight air brake.

When necessary to cut out either driver or tender brake, on account of defects, it shall be done by turning the handle of the four-way cock in the triple valve down, to a position midway between a horizontal and a vertical position.

**DOUBLE HEADERS.**—When two or more engines are coupled in the same train, the brakes must be connected through to, and operated from the head engine. For this purpose, a cock is placed in the train pipe, just below the engineer's valve. The engineer of each engine, except the head one, must close this cock and place the

handle of the engineer's valve in position 2. He will start his air pump and let it run, as though he were going to use the brake, for the purpose of maintaining air pressure on his engine and enabling him to assume charge of the train. brakes should occasion require it.

AN EXTRA AIR-BRAKE HOSE AND COUPLING, must always be carried on the engine for repairs, in case of a burst hose. Upon engines having the air signal, a signal hose and coupling must also be carried for the same purpose.

#### INSTRUCTIONS TO TRAINMEN.

MAKING UP TRAINS AND TESTING BRAKES.—When the engine has been coupled to the train, or when two sections have been coupled together, the brake and signal couplings must be united, the cocks in the train pipes—both brake and signal—must all be open except those at the rear end of the last car, which must be closed, and the hose hung up properly in the dummy coupling.

THE ANGLE COCK.

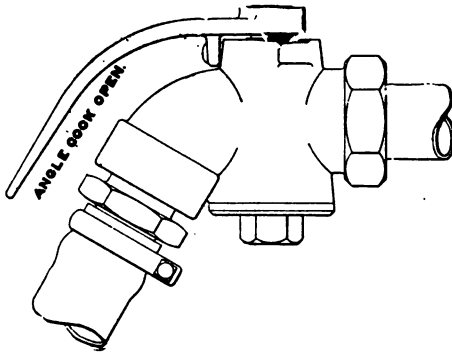


FIG. 2.—Angle Cock open.

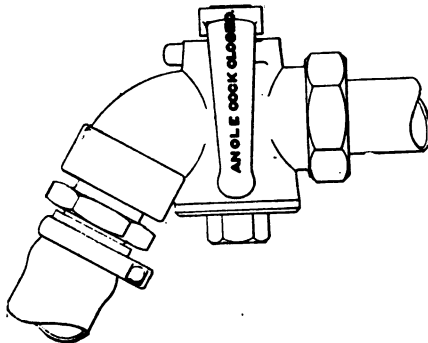


FIG. 3.—Angle Cock closed.

After the engineer has charged the train with air, he must then be signaled to apply the brakes. When he has done so, the brakes of each car must be examined to see if they are properly applied. When it is ascertained that each brake is applied, the engineer must be signaled to release the brakes. When the train air signal is to be used, the signal to the engineer to release the brakes must be given by means of

THE PLAIN STRAIGHT-WAY COCK.

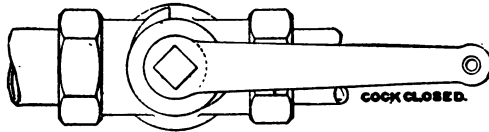


FIG. 4.—Cock closed.

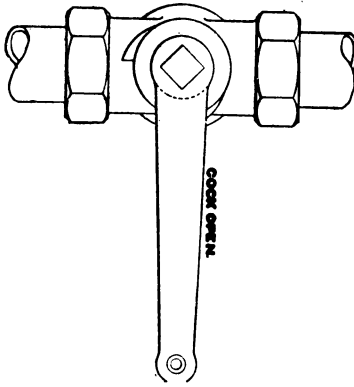


FIG. 5.—Cock open.

the air signal from the rear car of the train. The brakes of each car must then be examined to see that each is released.

If any defect is discovered it must be remedied and the brakes tested again — the operation being repeated until it is ascertained that everything is right. The conductor and engineer must then be notified that the brakes are all right. No passenger train must be started out with the brakes upon any car cut out, or in a defective condition, without special orders from the proper officers. At points where there are no inspectors, trainmen must carry out these instructions. The air brakes must not be alone relied upon to control any freight train with a smaller proportion of cars with the air brake in service than the division time card specifies.

**DETACHING ENGINE OR CARS.**—First close the cocks in the train pipes, at the point of separation, and then part the couplings, invariably by hand. If the brakes have been applied, do not close the cocks until the engineer has released the brakes upon the whole train.

**COUPLINGS FROZEN.**—If the couplings are found to be frozen together or covered with an accumulation of ice, the ice must first be removed and then the couplings thawed out by a torch, to prevent injury to the gaskets.

**BRAKES STICKING.**—If brakes are found sticking, the engineer must be signaled to release them. If he cannot do so and calls for release, or if brakes are applied to detached cars, the release may be effected by opening the small cock in the auxiliary reservoir, until the air begins to release through the triple valve, when the reservoir cock must immediately be closed.

**TRAIN BREAKING INTO TWO OR MORE PARTS.**—First close the cock in the train pipe at the rear of the first section, and signal the engineer to release the brakes. Having coupled to the second section, observe the rule for making up trains — first being sure that the cock in the train pipe at the rear of the second section has been closed, if the train has broken into more than two sections. When the engineer has released the brakes on the second section, the same method must be employed with reference to the third section, and so on. When the train has been once more entirely united, the brakes must be tested, as in making up a train.

**CUTTING OUT THE BRAKE ON A CAR.**—If, through any defect of the brake apparatus, while on the road, it becomes necessary to cut out the brake upon any car, it may be done by closing the cock in the cross-over pipe, near the centre of the car, where the quick-acting brake is used, or by turning the handle of the cock in the triple valve to a position midway between a horizontal and vertical, where the plain automatic brake is used. When the brake has been thus cut out, the cock in the auxiliary reservoir must be opened and left open until all the air has escaped from the reservoir. **THE BRAKE MUST NEVER BE CUT OUT UPON ANY CAR UNLESS THE APPARATUS IS DEFECTIVE,** and when it is necessary to cut out a brake, the conductor must notify the engineer, and also send in a report stating the reasons for so doing.

**CONDUCTOR'S VALVE.**—Should it become necessary to apply the brakes from the train, it may be done by opening the conductor's valve, placed in each passenger equipment car. **THE VALVE MUST BE HELD OPEN UNTIL THE TRAIN COMES TO A FULL STOP, AND THEN MUST BE CLOSED AGAIN.**



## THE PLAIN AUTOMATIC TRIPLE VALVE.

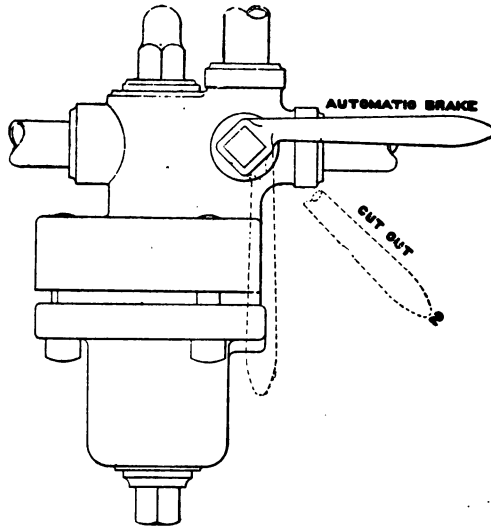


FIG. 6.

This method of stopping the train must not be used except in case of emergency.

**BURST HOSE.**—In the event of the bursting of a brake hose, it must be replaced and the brakes tested before proceeding.

**BRAKES NOT IN USE.**—When the air brakes are not in use, either upon the road or in switching, the hose must be kept coupled between the cars or hung up properly to the dummy couplings.

**PRESSURE RETAINING VALVE.**—When this valve is to be used, the trainmen must, at the top of the grade, test the brakes upon the whole train, and must then pass over the train and turn the handles of the pressure retaining valves horizontally (Position 2) upon all or a part of the cars, as may be directed. At the foot of the grade, the handles must all be turned downward again. (Position 1.) Special instructions will be issued as to the grades upon which these valves are to be used.

**TRAIN AIR SIGNAL.**—In making up trains, all couplings and car discharge valves on the cars must be examined to see if they are tight. Should the car discharge valve upon any car be found to be defective while on the road, it may be cut out of use upon that car by closing the cock in the branch pipe leading to the valve. The conductor must always be immediately notified when the signal has been cut out upon any car, and he must report the same for repairs.

In using the signal, pull directly down upon the cord during one full second, for each intended blast of the signal whistle, and allow two seconds to elapse between the pulls.

## THE PRESSURE RETAINING VALVE.

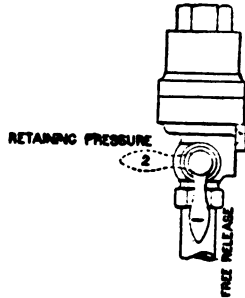


FIG. 7.

**REPORTING DEFECTS TO INSPECTORS.**—Any defect in either the air brake or air signal apparatus discovered upon the road must be reported to the inspector at the end of the run; or, if the defect be a serious one in passenger service, it must be reported to the nearest inspector, and it must be remedied before the car is again placed in service.

## INSTRUCTIONS TO ENGINE-HOUSE FOREMAN.

**GENERAL.**—It is the duty of engine-house foremen to see that the air brake and signal equipment is properly inspected upon each engine after each run. It must be ascertained that all pipe joints, connections and all other parts of the apparatus are air-tight, and that the apparatus is in good working order.

**AIR PUMP.**—The air pump must be tested under pressure, and if found to be working imperfectly in any respect, it must be put into thoroughly serviceable condition.

**PUMP GOVERNOR.**—The pump governor should cut off the steam supply to the pump, when the train pipe pressure has reached seventy (70) pounds. If it does not, it must be regulated to do so.

**ENGINEER'S BRAKE VALVE.**—This valve must be kept clean and in perfect order. With the handle in position 2, the main reservoir pressure must not be less than 20 pounds greater than train pipe pressure. The valve must be tested with the handle in positions 4 and 3, to note that the equalizing piston responds promptly and that there are no leaks from port to port under the rotary disc valve.

**ADJUSTMENT OF BRAKES.**—The driver brakes must be so adjusted that the pistons travel not less than one-third nor more than two-thirds of their stroke. When the cam brake is used, care must be taken to adjust both cams alike, so that the point of contact of the cams shall be in line with the piston rod. The tender brake must be adjusted by means of the dead truck levers, so that the piston travels not less than 4 nor more than 8 inches when the air brake is applied and the hand brake is released.

**BRAKE CYLINDERS AND TRIPLE VALVES.**—These must be examined and cleaned once every six months, and the cylinders oiled once in three months. If the driver-brake cylinders are in a position to be affected by the heat of the boiler, they must be oiled more frequently. A record must be kept of the dates of last cleaning and oiling for each engine.

**DRAINING.**—The main reservoir must be drained of any accumulated water after each trip, and the drain cup in train pipe under the tender frequently. The auxiliary reservoirs and triple valves must also be frequently drained, especially in cold weather.

**AIR SIGNAL.**—The train air signal apparatus must be examined and tested by opening and closing the cock in the signal pipe, at the rear of the tender, to see that the whistle responds properly. A pressure gauge must be applied to the air signal pipe once each month, to ascertain that the reducing valve maintains the proper pressure of 25 pounds per square inch in the train-signal pipe.

#### INSTRUCTIONS TO INSPECTORS.

**GENERAL.**—It is the duty of all inspectors to see that the couplings, the pipe joints, the conductor's valves, the air-signal valves, and all other parts of the brake and signal apparatus are in good order and free from leaks. For this purpose they must be tested under a full air pressure of seventy pounds, and any defects found must be remedied. No passenger train must be allowed to leave a terminal station with the brake upon any car cut out, or in a defective condition, without special orders from the proper officer.

If a defect is discovered in the brake apparatus of a freight car, which cannot be held long enough to give time to correct such defect, the brake must be cut out and the car properly carded, to call the attention of the next inspector to the repairs required.

The division time-card rules specify the smallest proportion of freight cars with the air brakes in good condition, which may be used in operating the train as an air-brake train.

**MAKING UP TRAINS AND TESTING BRAKES.** In making up trains, the couplings must be united and the cocks at the ends of the cars all opened, except at the rear end of the last car, where the cocks must be closed and the couplings properly hung up to the dummy couplings. After the train is charged, the engineer must be signaled to apply the brakes. When the brakes have been applied, they must be examined upon each car to see that they are properly applied. This having been ascertained, the inspector must signal the engineer to release the brakes, using the train air signal from the rear car. He must then again examine the brakes upon each car to note that each is released. If any defect is discovered it must be corrected and the testing of the brakes repeated, until they are found to work properly upon each car. The inspector must then inform both the engineer and conductor that the brakes are all right.

**CLEANING CYLINDERS AND TRIPLE VALVES.**—The brake cylinders and triple valves must be kept clean and free from gum. They must be examined for this purpose once in six months. The cylinders must be oiled once every three months, and the dates of last cleaning and oiling marked with chalk upon the cylinder in the places left for such dates opposite the words, which will be stenciled with white paint, in one-inch letters, upon the cylinder, as follows :

CYL. OILED.....

CYL. }  
TRIPLE } CLEANED.....

The triple valves and auxiliary reservoirs must be frequently drained, especially in cold weather, by removing the plug in the bottom of the triple valve and opening the small cock in the reservoir.

**ADJUSTMENT OF BRAKES.**—The slack of the brake shoes must be taken up by means of the dead truck levers.

In taking up such slack, it must be first ascertained that the hand brakes are off, and the slack is all taken out of the upper connections, so that the live truck levers do not go back within  $1\frac{1}{2}$  inches of the truck timber or other stop, when the piston of the brake cylinder is fully back at the release position. The adjustment must be such that the pistons shall move not less than four nor more than eight inches, when the brakes are fully applied.

**BRAKING POWER.**—Where the cylinder lever has more than one hole at the outer end the different holes are for use upon cars of different weights.

It must be carefully ascertained that the rods are connected to the proper holes, so that the correct braking power shall be exerted upon each car.

**REPAIR PARTS.**—Inspectors must keep constantly on hand for repairs a supply of all parts of the brake and signal equipment that are liable to get out of order.

**HANGING UP HOSE.**—Inspectors must see that, when cars are being switched or standing in the yard, the hose is coupled between the cars or properly secured in the dummy coupling.

**RESPONSIBILITY OF INSPECTORS.**—Inspectors will be held strictly responsible for the good condition of all the brake and signal apparatus upon cars placed in trains at their stations; they will also make any examination of brake apparatus or repairs to the same, which they may be called upon to do by trainmen.

**GENERAL QUESTIONS REGARDING THE USE OF THE WESTINGHOUSE AIR  
BRAKE AND TRAIN SIGNAL.**

**GENERAL QUESTIONS.**

(All parties who have to do with the use, adjustment, care or repairs of air brakes should be thoroughly examined on these questions, in addition to the special questions for each class of men following them.)

1. Question. What is an air brake?

Answer. It is a brake applied by compressed air.

2. Q. How is the air compressed?

A. By an air pump on the locomotive.

3. Q. How does the compressed air apply the brakes?

A. It is admitted into a brake cylinder on each car, and it pushes out a piston in that cylinder which pulls the brake on.

4. Q. How does the piston rod get back when the brakes are released?

A. There is a spring around the piston rod which is compressed when the brakes are applied, and when the air is allowed to escape to release the brakes, this spring reacts and pushes the piston in again.

5. Q. What was the first and simplest form of air brake?

A. The straight air brake.

6. Q. How was the straight air brake applied and released?

A. The engineer applied the brake by admitting air from the reservoir on the locomotive through a train pipe to all the brake cylinders, and he released the brakes by first shutting off the reservoir from the train pipe, and then opening the train pipe and all the brake cylinders to the atmosphere, so that the compressed air could escape again.

7. Q. Is the use of the straight air brake now allowable?

A. No.

8. Q. Why not?

A. Because it has been replaced by an improved form of brake called the automatic brake.

9. Q. Why is it called an automatic brake?

A. Because it is applied automatically by any derangement which reduces the air pressure in the train pipe, such as by the bursting of a hose or the parting of a train.

10. Q. What necessary parts has the automatic brake on a car which the straight air brake had not?

A. One auxiliary reservoir and one triple valve.

11. Q. Where is the compressed air kept ready for use in the automatic air brake?

A. In the main reservoir on the locomotive, in the smaller or auxiliary reservoir on each car and in the train pipe.

12. Q. Where does the compressed air come from directly, that enters the brake cylinder when the automatic brake is applied?

A. It comes from the auxiliary reservoir on each car.

13. Q. How does it get into the auxiliary reservoir.

A. It is furnished from the main reservoir on the locomotive through the train pipe when the brakes are released.

14. Q. How is the automatic brake applied and released ?

A. The automatic brake is applied by reducing the air pressure in the train pipe at the locomotive or at any other point, and it is released by restoring the pressure in the train pipe from the main reservoir on the locomotive.

15. Q. Why does the compressed air not enter directly into the brake cylinder from the train pipe, as in the straight air brake ?

A. Because the triple valve used with the automatic brake prevents the air from entering directly from the train pipe to the brake cylinder when the pressure in the train pipe is maintained or increased.

16. Q. What other uses has the triple valve.

A. It causes the brake cylinder to be opened to the atmosphere under each car, and releases the brakes when the pressure in the train pipe is restored from the locomotive, and it opens communication from the train pipe to the auxiliary reservoir by the same movement ; when the pressure in the train pipe is reduced, it closes the openings from the train pipe to the auxiliary reservoir and from the brake cylinder to the atmosphere, and then opens the passage between the auxiliary reservoir and the brake cylinder by the same movement, so as to admit the air and apply the brakes.

17. Q. How many forms of triple valves are there in use, and what are they called ?

A. Two ; the plain triple and the quick-acting triple.

18. Q. How can you tell the plain triple from the quick-acting triple ?

A. The plain triple has a 4-way cock in it with a handle for operating the cock ; the quick-acting triple has no such cock in it, but there is a plug cock in the cross-over pipe leading from the train pipe to the triple when the quick-acting triple is used.

19. Q. What are these cocks for, in both cases ?

A. They are to be used to cut out brakes on one car, without interfering with other brakes on the train, if the brake on that car has become disabled.

20. Q. How does the cock handle stand in the plain triple valve when the pipe is open for automatic action ?

A. It stands in a horizontal position.

21. Q. In what position does the same handle stand when the brakes are cut out by closing the cock ?

A. It stands at an inclined position midway between horizontal and vertical.

22. Q. Can this cock handle be placed in any other position, and what ?

A. In the older form of plain triple valve it can be moved to a vertical position.

23. Q. What was this position for, and is it still used ?

A. This was to convert the automatic brake into a straight air brake, and it was needed when some cars were equipped with straight air brake and some with automatic brake, but it is not now used.

24. Q. How does the handle of the plug in cross-over pipe, used with the quick-acting triple, stand for automatic action ?

A. It stands with the handle crosswise with the pipe, and the cock is then open.

25. Q. How does it stand when the cock is closed and the brake cut out of action?

A. It stands with handle lengthwise of cross-over pipe.

26. Q. How is the train pipe coupled up between the cars?

A. By means of a rubber hose on each end of the train pipe, fitted with a coupling at the loose end.

27. Q. How is the train pipe closed at the rear end of the train?

A. By closing the cock in the train pipe at the rear end of the last car.

28. Q. How many such train-pipe cocks are there to a car, on the air-brake train-pipe and on the air-signal train pipe, and why?

A. Two for each pipe on each car, because either end of any car may sometimes be at the rear end of the train.

29. Q. How many kinds of train-pipe cocks are there in use at the ends of the cars?

A. Two.

30. Q. Describe each and give the position of the handles for open and closed in each case?

A. The older form of train-pipe cock is a straight plug cock in the train pipe not far from the hose connection; the handle stands crosswise with the pipe when it is open, and lengthwise with the pipe when closed; it is now found principally on the air-signal pipe. The other form of train-pipe cock, now used on the air-brake pipe, is an angle cock placed at the end of the train-pipe and close to the hose. The handle of the angle cock stands lengthwise with the pipe when open, and crosswise with the pipe when closed.

31. Q. What uses have these train-pipe cocks besides to close the pipe at the rear end of the train?

A. They are to be used to close the train-pipe at both sides of any hose coupling which is to be parted, as when the train is cut in two.

32. Q. Why is it necessary to close the train pipe on both sides of the hose coupling before it is parted?

A. To prevent the escape of air from the train pipe which would apply the brakes.

33. Q. How must the hose coupling be parted when it is necessary to do so, and why?

A. The air brake must first be released on the train, then the adjacent train-pipe cocks must both be closed and the coupling must be parted by hand, to prevent the possibility of injury to the rubber gasket in the coupling.

34. Q. Why must the brakes be fully released before uncoupling the hose between the cars?

A. Because if the brakes are applied upon a detached car they cannot be released without bleeding the auxiliary reservoir, and thus wasting air.

35. Q. In coupling or uncoupling the hose between cars, what must be done if there is ice upon the couplings?

A. The ice must first be removed and the couplings thawed out, so as to prevent injury to the rubber gaskets in uncoupling, and to insure tight joints in coupling the hose.

36. Q. What must be done with a hose coupling which is not coupled up, such as the rear hose of a train, or any hose on a car which is standing or running but not in use?

A. It must be placed in the dummy coupling provided for it on each end of each car, in such manner that the flat pad on the dummy will close the opening in the coupling.

37. Q. Why is this important?

A. Because if it is not done properly, dust and dirt will enter the hose, and when it is again coupled up in service, this dirt will be blown into the triple valve and interfere with its proper working, and will cause it to wear out more rapidly.

38. Q. What pressure should be carried in the train pipe and auxiliary reservoir?

A. Seventy pounds pressure to the square inch.

39. Q. Why should this pressure be 70 pounds?

A. Because this pressure is necessary, to get the full braking force which each car is capable of using, and, if it be exceeded, there will be danger of sliding the wheels.

40. Q. How much pressure can be obtained in the brake cylinder by the ordinary application of the brakes with 70 pounds in the auxiliary reservoir?

A. About 50 pounds pressure to the square inch.

41. Q. Why can only 50 pounds pressure be obtained under these circumstances?

A. Because the air at 70 pounds pressure in the auxiliary reservoir expands into a larger space when the auxiliary reservoir is opened to the brake cylinder, and, when the pressure has become equalized, it is thus reduced to 50 pounds.

42. Q. How much must the train-pipe pressure be reduced, in order to get 50 pounds pressure in the brake cylinder, in ordinary service?

A. Twenty pounds, or from 70 pounds down to 50 pounds in the train pipe also.

43. Q. Can the brakes be applied so as to get only a portion of this 50 pounds pressure in the brake cylinder, and how?

A. They can be so applied by reducing the train-pipe pressure less than 20 pounds.

44. Q. If the train-pipe pressure be reduced 10 pounds what will the pressure be in the brake cylinder?

A. About 25 pounds.

45. Q. How is this graduated action obtained?

A. By means of the graduating valve in the triple valve.

46. Q. Is it important to keep all the air-brake apparatus tight and free from leaks?

A. Yes.

47. Q. Why is this important.

A. In order to get full service from the air brakes, and to prevent the waste of air, and also to prevent the brakes applying automatically by reason of leak in the train pipe.



48. Q. Is it important to know that the train pipe is open throughout the train and closed at the rear end before starting out ?

A. Yes, this is very important.

49. Q. Why is this very important ?

A. Because if any cocks in the train pipe were closed, all the brakes back of the cock which is closed would be prevented from working.

50. Q. How can you know that the train-pipe cocks are all open when the train is made up.

A. By testing the brakes ; that is, by applying and releasing them, and observing whether they all operate.

51. Q. Do you understand that no excuse will be acceptable for starting out the train without first testing the air brakes ?

A. Yes.

52. Q. Why is this rule absolute ?

A. Because the safety of passengers and of property depends upon the brakes being properly coupled up and in an operating condition before the train is started.

53. Q: At what other times should the brakes be tested, and how ?

A. Before starting the train down a heavy grade, and the test should be made with a full application of the brakes.

54. Q. How much air pressure should be carried in the air-signal train pipe ?

A. Twenty-five pounds pressure.

55. Q. Is it important that this train pipe and its connections be also kept tight ?

A. Yes.

56. Q. How far should the brake piston travel in the cylinders on cars and tenders with a full application of the brake ?

A. Not less than four inches nor more than eight inches.

57. Q. Why should they travel not less than four inches ?

A. Because it is necessary to have them travel four inches in order to fully close the leakage groove provided in the brake cylinder for the escape of small amounts of air which may leak through the triple valve. If these grooves were not closed, the brakes would soon leak off after they are applied.

58. Q. Why should the piston travel not more than eight inches ?

A. Because if it travels further than this, a little wear of the brake shoes will cause the piston to travel far enough to rest against the back cylinder head, when the brakes are applied, and this cylinder head would then take the pressure instead of its being brought upon the brake shoes.

59. Q. How far should the driver brake piston travel with a full application of the brakes, and why ?

A. Not less than one-third of the full stroke of the piston nor more than two-thirds of its full stroke, for reasons similar to those given for cars and tenders.

60. Q. If the brakes stick upon any car so that the engineman cannot release them at any time, how are you to release them ?

A. By opening the release cock in the auxiliary reservoir, and holding it open until air begins to escape from the triple valve, and then closing it again.

61. Q. What is the pressure-retaining valve, and what is its use?

A. The pressure-retaining valve is a small valve placed at the end of a pipe from the triple valve, through which the exhaust takes place from the brake cylinder. It is used to retard the brake release on heavy grades and hold the brakes partially applied, so as to allow more time for the engineman to recharge the auxiliary reservoir.

62. Q. What precautions are necessary on every train in regard to hose couplings?

A. Every train must carry at least two extra hose and couplings complete, for use in replacing any hose couplings which may fail or become displaced. These extra hose and couplings to be carried on such part of the train as is required by the rules and regulations.

#### SPECIAL FOR ENGINEMEN.

63. Q. How should the air pump be started?

A. It should be started slowly, so as to allow the condensation to escape from the steam cylinder, and prevent pounding, which is more likely to occur when the air pressure is low.

64. Q. Why should the piston rod on the air pump be kept thoroughly packed?

A. To prevent condensation in the steam cylinder from running down the rod into the air cylinder, and thus getting water in the air-brake service.

65. Q. How should the steam cylinder of the air pump be oiled, and what kind of oil should be used?

A. It should be oiled as little as necessary through a sight feed lubricator, and cylinder oil should be used.

66. Q. How should the air cylinder of the air pump be oiled; what kind of oil, and why?

A. It should be oiled very little, by once filling the oil-cup with West Virginia well oil daily. The oil must never be introduced through the air inlet ports, as this practice would cause the valves to gum up.

67. Q. What regulates the train-pipe pressure?

A. The pump governor.

68. Q. At what pressure in the train pipe must the pump governor stop the pump, and do you understand the importance of keeping this pump governor in order and operating at that pressure?

A. It must stop the pump at a pressure of 70 pounds in the train pipe, and it must be kept clean and adjusted to this pressure in order to get the best service from the air brakes.

69. Q. Why is the equalizing engineer's valve better than the older forms?

A. Because it enables the engineer to apply the brakes more uniformly throughout the train and with less shock to the train, especially when the quick-acting triple valves are used. It also prevents the brakes from being kicked off on the forward end of the train when the engineer closes the valve.

70. Q. Why does the equalizing engineer's valve produce these results in ordinary service stops?

A. Because the engineer does not, in such cases, open the train pipe to the atmosphere direct, but he only reduces the air pressure above the piston in the

engineer's valve, which causes that piston to open the train pipe to the atmosphere, and to close the opening gradually when the train-pipe pressure has been correspondingly reduced.

71. Q. What does the excess pressure valve in the engineer's valve accomplish, and do you regard it important to have it working properly?

A. It maintains an excess pressure of about 20 pounds in the main reservoir above the pressure in the train pipe, and it is important that it be kept clean and in working order so as to have this excess pressure to insure release and for use in recharging the train quickly after the brakes are released.

72. Q. How often should the brake valve be thoroughly cleaned and oiled?

A. At least once every two months.

73. Q. If the rotary disk valve in the engineer's valve is unseated by dirt or by wear, what may be the result, and what should be done?

A. It may be impossible to get the excess pressure; when the brakes have been applied they may keep applying harder until full on, or when they have been applied they may go off. The rotary disk valve should be thoroughly cleaned, and if worn it should be faced and ground to a seat.

74. Q. If the piston in the engineer's valve becomes gummed up or corroded from neglect to clean it, what will be the result?

A. It will be necessary to make a large reduction of pressure through the preliminary exhaust port before the brakes will apply at all, and then the brakes will go on too hard and will have to be released.

75. Q. When the engine is standing alone and the pump is running, why must the engineer's valve not be left standing in the lap position (No. 3)?

A. Because the main reservoir pressure may become so high that, when the handle of the engineer's valve is again placed in the release position, it will cause the train pipe and tender auxiliary reservoir to be charged with too high pressure which might injure the adjustment of the pump governor as well as cause the tender wheels to be slid with the first application of the brakes.

76. Q. When the engine is coupled to the train, why is it necessary to have the full train-pipe pressure and the excess pressure on the main reservoir?

A. So that the brakes will all be released and the train quickly charged when the engineer's valve is placed in the release position.

77. Q. When the train is charged, and the train-pipe pointer of the air gauge begins to rise, how must you test the train-pipe for leaks?

A. By placing the handle of the brake valve in the lap position, and by observing whether the black pointer stands still or falls back. The more rapidly it falls back the greater is the leak indicated.

78. Q. Why should the driver brakes always be operated automatically with the train brake?

A. Because it adds greatly to the braking force of the train and the brakes can be applied alike to all the wheels for ordinary stops, and in an emergency the greatest possible braking force is at once obtained by one movement of the handle.

79. Q. In making a service application of the brakes, how much reduction of the train-pipe pressure from 70 pounds does it require to get the brakes full on?

A. About 20 pounds reduction.

80. Q. What should the first reduction be in such an application, and why?

A. From six to eight pounds, so as to insure moving the pistons in the brake cylinders past the leakage groove, yet not apply the brakes too hard until the slack in drawbars and drawsprings is first taken up.

81. Q. What is the result of making a greater reduction of pressure than 20 pounds?

A. A waste of air in the train pipe, without getting any more braking force, and therefore requiring more air to release the brakes.

82. Q. How many applications of the brakes are necessary in making a stop?

A. Generally only one; by applying them lightly at first with six or eight pounds reduction of air in the train pipe, and afterward gradually increasing the force of the application. Two applications are as many as should ever be required.

83. Q. Why is it dangerous to apply and release the brakes repeatedly in making stops?

A. Because every time the brakes are released the air in the brake cylinder is thrown away, and, if it is necessary to apply them again before sufficient time has elapsed to recharge the auxiliary reservoirs, the application of the brakes will be weak, and after a few applications the brakes are almost useless on account of the air having been exhausted from the auxiliary reservoirs.

84. Q. In releasing and recharging the train, how long should the handle of the engineer's valve be left in the release position?

A. Until the train-pipe pressure has risen to nearly 70 pounds again.

85. Q. In making service stops why should you release the brakes a little before coming to a full stop?

A. So as to prevent stopping with a lurch; it also requires less time for the full release of the brakes after stopping.

86. Q. In making service stops, why must the handle of the engineer's valve not be moved past the position for service applications?

A. So as to prevent unnecessary jerks to the train, and the emergency action of the triple valve when not necessary.

87. Q. If you find the train dragging from the failure of the brakes to release how can you release them?

A. By placing the handle of the engineer's valve in the running position until full excess pressure is attained, and then throwing it quickly into the release position.

88. Q. When the brakes go on suddenly when not operated by the engineer's valve, and the gauge pointer falls back, what is the cause, and what should you do?

A. Either a hose has bursted, or a conductor's valve has been opened, or the train has parted. In any event, the handle of the engineer's valve must be immediately placed in the lap position to prevent the escape of air from the reservoir.

89. Q. Are the brakes liable to stick on after an emergency application, and why?

A. The brakes are harder to release after a severe application, because they are on with full force, and it requires higher pressure than usual in the train pipe to

release them again. In this case it is necessary always to have in reserve the excess pressure on the main reservoir to aid in releasing the brakes. With the quick-acting triple valve this is especially necessary, because air from the train pipe as well as from the auxiliary reservoir is forced into the brake cylinder when a quick application of the brake is made, thus increasing the pressure in the brake cylinder, and requiring a high pressure in the train-pipe afterward to cause the brakes to be released.

90. Q. In using the brakes to steady the train while descending grades, why should the air-pump throttle be kept well open?

A. So that the pump may quickly accumulate a full pressure in the main reservoir for use in recharging the train when the brakes have been released again.

91. Q. In descending a grade, how can you best keep a train under control?

A. First, by commencing the application of the brakes early, so as to prevent too high a speed being reached. Second, by applying the brakes lightly at first, then increasing the brake pressure as needed, and by slowing the train down just before it is necessary to release the brakes for recharging, so as to give them time enough to refill the auxiliary reservoirs before much speed is again attained.

92. Q. If the train is being drawn by two or more engines upon which engine should the brakes be controlled, and what does the enginemen of the other engines do?

A. The brakes must be controlled by the leading engine, and the enginemen of the following engines must close the cock in the train-pipe just below the engineer's valves. The latter must always keep his pump running and in order, and main reservoir charged, with the engineer's valve in the running position, so that he may quickly operate the brakes if called upon to do so.

93. Q. If the air-signal whistle only gives a weak blast, what is the probable cause?

A. Either the reducing valve is out of order so that the pressure is less than 25 pounds or the whistle itself is filled with dirt.

94. Q. If the reducing valve for the air signal is allowed to be clogged up with dirt, what will the result probably be?

A. The signal pipe might get the full main reservoir pressure, and the whistle will blow when the brakes are released.

95. Q. If you discover any defect in your air brake or signal apparatus while on the road, what must you do?

A. If it is something that cannot be readily remedied at once, it must be reported to the engine-house foreman as soon as the run is completed.

96. Q. What is the result if water be allowed to collect in the main reservoir of the brake apparatus?

A. The room taken up by the water reduces the capacity for holding air, and the brakes are more liable to stick. In cold weather also the water may freeze and prevent the brakes from working properly.

#### SPECIAL FOR ENGINE REPAIRMEN.

97. Q. How often must the air brake and signal apparatus on locomotives be examined?

A. After each trip.

98. Q. Under what pressure must it be examined?

A. Under full pressure, *i. e.*, 70 pounds on the air-brake train pipe, 20 pounds excess in the main reservoir and 25 pounds pressure upon the air-signal train pipe.

99. Q. How will you be sure that proper pressures are upon the two train pipes?

A. By regulating, and, if necessary, cleaning the pump governor so that it will shut off steam from the pump when 70 pounds train-pipe pressure is reached, and by examining, and, if necessary, cleaning the pressure-reducing valve for the signal train pipe, so that it maintains 25 pounds pressure in the train pipe.

100. Q. If you do not obtain 20 pounds excess pressure in the main reservoir when the handle of the engineer's valve is in the running position, what is the cause?

A. Either the excess-pressure valve needs cleaning, or the rotary disk valve in the engineer's valve is unseated and allows air to leak from one port to another.

101. Q. Why must the air-pump piston rod be kept well packed?

A. To prevent condensation in the steam cylinder from running down into the air cylinder and getting into the brake service.

102. Q. How often must the main reservoir and the drain cup under the tender be drained?

A. After each trip.

103. Q. How often must the triple valves and the cylinders of the driver and tender brakes be cleaned and oiled?

A. They must be thoroughly cleaned and oiled with a small amount of well oil once every six months, and the cylinders must be oiled every three months. If the driving-brake cylinders are so located that they become hot from the boiler, they may require oiling more frequently.

104. Q. If there are any leaks in the pipe joints or anywhere in the apparatus, what must you do?

A. Repair them before the engine goes out.

105. Q. How is the brake-shoe slack of the cam-driver brake taken up, and what precautions are necessary?

A. By means of the cam screws, and it is necessary to lengthen both alike, so that when the brake is applied the point of contact of the cams will be in a line with the piston rod.

106. Q. How is the brake-shoe slack of driver brakes on a locomotive with more than two pairs of driving wheels taken up?

A. By means of a turn-buckle or screw in the connecting rods.

107. Q. How is the slack of the tender brake shoes taken up?

A. By means of the dead truck levers: if they will not take it up enough, it must be taken up in the underneath connection, and then adjusted by the dead lever.

108. Q. What travel of piston should the driver brakes be adjusted for?

A. For not less than one-third nor more than two-thirds of the full stroke of the piston.

109. Q. What travel of piston should the tender brakes be adjusted for?

A. Not less than four inches nor more than eight inches.

## SPECIAL FOR TRAINMEN.

110. Q. How should you proceed to test the air brakes before starting out, or before descending a heavy grade?

A. After the train has been fully charged with air, the engineman must be signaled to apply the brakes; when he has done so, the brakes must be examined upon each car to see that the air is applied, and that the piston travel is not less than four inches nor more than eight inches. The engineman must be then signaled to release the brakes, and this signal must be given by the train air signal from the rear car, if it is in use upon the train; after he has done so, each brake must be examined again to see that all are released. The engineman and conductor must then be notified that the brakes are all right, if they are found so.

111. Q. In starting out a passenger train, how many cars must have the brakes in service?

A. Every car upon the train.

112. Q. When might you cut out a brake upon a passenger car?

A. Never; unless it gets out of order while on the run, in which case it must be reported to the inspector at the end of the run, or upon the first opportunity which may give sufficient time to repair it.

113. Q. If a hose bursts upon the run what must be done?

A. The hose must first be replaced by a good one, and the engineman then signaled to release the brakes. The train must not proceed until the brakes have been reconnected and tested upon the train to see that all are working properly.

114. Q. If the train breaks in two, what must be done?

A. The cock in the train pipe at the rear end of the first section must be closed, and the engineman signaled to release the brakes. The two parts of the train must then be coupled, the hose connected and the brakes again released by the engineman. After the train has been completely coupled up and the brakes are released, all brakes must be tested before continuing the run.

115. Q. Explain how the pressure-retaining valves are thrown into action or thrown out of action, and when this must be done?

A. The pressure-retaining valve is thrown into action by turning the handle of the valve to a horizontal position, and it is thrown out of action again by placing his handle in a vertical position pointing downward. This handle should be placed in a horizontal position at the top of a heavy grade, and it should always be returned to a vertical position at the foot of the grade, as otherwise the brakes will drag on any cars which still have the handle of the pressure-retaining valve in the horizontal position.

116. Q. If the brake of any car is found to be defective on the run, how should you proceed to cut it out?

A. By closing the cock in the cross-over pipe of the quick-acting brake, or in the triple valve of the plain automatic brake, and then opening the release cock in the auxiliary reservoir upon that car until all the air has escaped from it.

117. Q. What is the conductor's valve, and what is its use?

A. It is a valve at the end of the branch pipe leading from the train-brake pipe upon each car; it is to be opened from the car in any emergency when it is necessary

to stop the train quickly, and only then. When used it should be held open until the train is stopped, and then it should be closed.

118. Q. What is the air signal for, and how is it operated.

A. It is to signal the enginemen, in place of the old gong signal, and it is operated by pulling directly downward on the cord one second for each signal given and allowing two seconds to elapse between pulls.

119. Q. If the car discharge valve on the air-signal system is out of order or leaking on any car how can you cut it out?

A. By closing the cock in the branch pipe leading from the train signal-pipe to the discharge valve; to do so the handle of this cock should be placed lengthwise with the pipe.

120. Q. How is the slack taken up so as to secure the proper adjustment of piston travel?

A. By means of the dead truck lever, and if that is not sufficient, one or more holes must be taken up in the underneath connection and the adjustment then made by the dead truck lever.

#### SPECIAL FOR INSPECTORS.

121. Q. Do you understand that no passenger train may be started out with any of the brakes cut out of service?

A. I do.

122. Q. Why is it important that no leaks should exist in the air-brake service?

A. Because they would interfere with the proper working of the brakes and might cause serious damage.

123. Q. What must be done with the air brake or air-signal couplings when not united to other couplings?

A. They must be secured in the dummy coupling, so that the face of the dummy coupling will cover the opening of the hose coupling so as to prevent dust and dirt from entering the hose.

124. Q. If air issues from the release port of the triple valve when the brakes are off, what is the cause?

A. It is probably due to dirt on the rubber-seated emergency valve.

125. Q. How often must the cylinder and triple valves be examined, cleaned and oiled?

A. Once every six months, and the cylinders must be oiled once every three months with a small quantity of well oil. The dates of the last cleaning and oiling must be marked with chalk on the cylinders.

126. Q. To what travel of piston must the brakes be adjusted.

A. Not less than four inches nor more than eight inches.

127. Q. How is the slack taken up so as to secure this adjustment.

A. by means of the dead truck lever, and if that is not sufficient one or more holes must be taken up in the underneath connection and the adjustment then made by the dead truck lever.



128. Q. What are the different holes in the outer end of the cylinder levers for, and why must the connections be pinned to the proper hole for each car?

A. These holes are to enable the adjustment of the brake pressure to be made according to the weights of different cars. The connection must be made to the proper hole in each case, according to the weight of the car so as to give proper braking power, otherwise the brake will be inefficient, or the wheels may be slid under the cars.

## DISCUSSION.

MR. LENTZ : Since this report was agreed upon by this committee and placed in the hands of the Secretary, the Chairman received two communications, one from Mr. Rhodes, of the Chicago, Burlington & Quincy Railroad, and one from Mr. Wall. It was decided by the committee since coming to Cape May that communications should be handed to the parties who presented them to the committee to present to the convention. One is from Mr. Wall, the other from Mr. Rhodes. In the absence of Mr. Wall I will read his recommendation.

THE PRESIDENT : Gentlemen, you have heard the report of the committee. What will you do with it?

MR. CASANAVE : I move that the report be received, and inasmuch as the substance of the recommendations have already been adopted and made part of the Rules, with the exception of a slight alteration, it seems to me there is nothing further to do. The recommendations are practically adopted. I move the report be received.

The motion was seconded.

THE PRESIDENT : It is moved that the report be received.

MR. RHODES : Mr. Chairman, the motion made, as I understand it, was that the committee's report be adopted, and you have put it to be received. I shall vote in the affirmative if it is to be received, but if it is to be adopted, I will propose an amendment.

THE PRESIDENT : The motion was to receive the report.

The motion to receive the report was carried.

Mr. Lentz read the following letter from Mr. Wall :

As chairman of the Committee of the Master Car-Builders' Association on Air Brake Standards and Inspection, and Care of Air Brakes on Freight Cars, I would call your attention to the desirability of changing the diameter of the air-brake gear pins from  $1\frac{7}{8}$  to  $1\frac{3}{4}$  in. I originally made the recommendation that this dimension should be  $1\frac{7}{8}$  as it now stands, and that the holes into which the pins fit be  $1\frac{1}{8}$  in. in diameter, the opinion of our committee being at that time that such a snug fit would very greatly enhance the efficiency of the brake gear. Practical experience, however, has clearly demonstrated that the difference in diameter in the hole and the pin is too slight, and that the workmanship obtained is not of a quality to always insure that the pin will fit in any hole when the nominal difference is only  $\frac{1}{8}$  in. It therefore seems desirable that the change recommended above be made. The difference between the diameter of the hole and the pin will then be  $\frac{3}{8}$  in. The change involves no alteration of the holes, and does not interfere with brakes already

in existence or their repairs. There will be no hardship in making the change, as I am convinced that the actual diameter of the pins now in service is more nearly  $1\frac{7}{8}$  in. than  $1\frac{7}{4}$  in.

MR. BARR: I am satisfied that Mr. Wall's suggestion is a good practical thing, and I will make a motion that the alteration be submitted to letter ballot. I do not know any other way to meet it.

The motion was seconded.

MR. SCHROYER: I would amend that motion by inserting that the figures as shown on the standards be changed to meet the suggestions made by Mr. Wall.

MR. GRIEVES: It does not seem to me to be necessary to submit the matter of a change like this, where only a sixty-fourth of an inch is involved, to letter ballot. I should think this meeting had the power to authorize the Secretary to make that change in our standard.

MR. BARR: Mr. Chairman, I withdraw my motion.

MR. GRIEVES: I would move then that the Secretary be authorized to make that change in the air-brake standard.

MR. MACKENZIE: I do not believe we are authorized to do any such thing. It is a matter of standards before the Association.

MR. E. CHAMBERLAIN: I rise to support the remarks of Mr. Mackenzie. We put these drawings and specifications out as standards. It seems to me that it would be very inexpedient, very improper, very unjust to do what is proposed.

MR. SCHROYER: Has not this Association the power to make that change by instruction to the Secretary, and if it is in violation of our Constitution, are we not violating our Constitution all the time? Are you not violating our Constitution when you require me to accept a device on one of our cars that is coming from another road that is not the standard of the Master Car-Builders' Association? In your Rules of Interchange you require me to do it, and in our Constitution nothing is to be done by this Association but what is recommendatory in its character. I would ask the gentlemen who are opposed to this motion as to whether they are using the Master Car-Builders' standards, and if they are opposed to it, and not using it, why they are opposed to it?

MR. BARR: To facilitate business I will make my motion again—that the change in the standard of  $1\frac{7}{4}$  to  $1\frac{3}{2}$  be submitted to letter ballot.

The motion was seconded and carried.

MR. CASANAVE: The committee also present to the Association a set of rules governing the operation and maintenance of the Westinghouse Automatic Brake. The report has been very carefully prepared. I think it is due to the committee to take some action upon it. I therefore move that the rules governing the operation and maintenance of the Westinghouse Automatic Brake presented by the committee be adopted, in order to bring the matter before us.

The motion was seconded.

MR. BARR: I move to amend Mr. Casanave's motion, that the rules be submitted to letter ballot.

MR. E. CHAMBERLAIN: I second that.

MR. CASANAVE: I accept the amendment.

MR. RHODES: Before we act on that I would like to call attention to some points in this report, and to have us consider whether that is the best action for us to take. The rules have undoubtedly received a great deal of care and a great deal of attention by the committee, and I think, with some modifications which might be made in them, they would be exceedingly useful. The committee recommends in the first place, that this code of rules, as presented, be voted on, and later, that the questions and answers covering the examination of all employés be also submitted and acted on. Now, it is fair to assume that in the preparation of this there are a good many changes made from time to time in some of the questions, and it is, also, not unlikely that a little further consideration may bring about still more changes. There are several points in the rules which I wanted to call attention to. In the first place, on page 1, the first sentence says:

Every employé whose duties are connected in any way with the operation of the air brake will be examined as to his qualifications for such duties by the inspector of air brakes, or other person appointed by the proper authority. Every such employé will be required to have in his possession a certificate of competency to perform such duties, which will be given him only after having passed a satisfactory examination.

This is a certificate which we are required to give to each of our employés. Now, if this book is issued, and any question comes up as to the competency of an employé, and as to his knowledge of the questions which are considered, it will go hard if the railroad company has not furnished him with a certificate, and has not given him that examination. Then, if we turn to the second page, "Instructions to Enginemen," there are some points which I think we ought

to consider a little further. Under "General," towards the end, it says :

That the engineer's brake valve works properly in all different positions of the handle, and that, when the brakes are fully applied, the driver brake pistons do not travel less than one-half or more than two-thirds of their stroke, and the tender brake piston does not travel less than four or more than eight inches.

Now take a quick-action brake. You have an auxiliary reservoir supplying air to the two driver-brake cylinders. You have an auxiliary reservoir of the same size supplying air to the one tank cylinder. When you go to throw the brakes off, let us suppose that the tank cylinder only has the four inches travel, you throw back your excess pressure — may be 120 pounds in the reservoir — into the train pipe. That goes through the train pipe. It at once throws off the tank brake which has a pressure on top of it, on account of the low travel, of probably only sixty pounds. On the driver brakes and on the cars which have the longer travel, and particularly on the driver brakes where there are two cylinders to be supplied from the same amount of air, there are only fifty pounds to be thrown off. They of course quickly throw off; but also the tank throws off on account of the excess pressure. Now, while this 120 pounds is there you are storing up pressure above the maximum in your tank, and when you put your engineer's handle in position, the result is that the tank brake goes on again, because it has a greater pressure stored in its auxiliary reservoir than the seventy pounds which the train pipe has equalized. On our line, the knowing engineer, when he finds that his tanks are sticking, invariably drops down and lets off the auxiliary pressure, which he knows is holding the brake on to his tank. So that I think the four-inch travel is too short, and at our Western Club we got the matter to five inches. But my recommendation is that that be six inches. It went through in our rule without anybody calling attention to it, and escaped my notice. I had intended calling attention to it at that time. This second rule :

Engineers must report to round-house foreman at the end of a run any defect in the air brake or signal apparatus

is a very good rule which certainly ought to go in. Here is another question in the last paragraph :

After the engineer is satisfied that there are no serious leaks in the train, he will, at a signal from the inspector or trainmen, apply the brakes and leave them so applied until the brakes on the entire train have been inspected, and the signal is given to release.

Now on our line, we give those instructions, but we invariably tell our men to apply the brakes by exhausting all the air from the train pipe, and I think that is quite an important provision to put in here. It is important for several reasons. I will illustrate it by citing a case. On our line we had an accident on a freight train. A freight train was running with eight air-brake cars in a mixed train. The eight air-brake cars were connected up. At a stop two additional air-brake cars were taken on, and were put ahead of those eight, making a train of ten cars. On approaching a crossing where a Chicago, Burlington & Quincy train stood, the freight train was expected to make the stop. When it came to making the final stop, to the engineer's astonishment his brakes did not hold. Investigation showed that in place of having the brake on the ten cars, he had brakes only on two cars. In putting on these two additional cars they had overlooked inspecting the brakes. The stop cock was shut, and the man not being thoroughly posted about brakes — he had been using them and not paying any attention to the exhaust of the air — he did not know from his application that he was not applying brakes to his ten cars. Now if you have your rules to apply the brakes by exhausting all the air from the train pipe, the man can tell by the sound approximately how many brakes he has got connected up. As he is going over the road he is accustomed to know whether he has a long pipe or a short pipe. The engineer goes by sound. Where would we be with our throttle if it was not for the sound? So it is with the engineer's valve. The engineer's valve is lost if he has not got the sound. There are a number of other points in this matter which I would criticise. I do not quite know whether we want to take up the time of the convention now on it; but it seems to me, if we act on these instructions as they are now, that we are going to make mistakes. We are not going to get the full benefit of giving it more detailed attention. I would be disposed to refer this subject to the committee to revise. I do not know just what is the best thing to do with it. Of course, if it was revised and submitted to letter ballot, perhaps that committee might get some things in here which would not be satisfactory, but I do think that there are a number of important matters which ought to be covered. If the convention wants to take the time, I can go over it. I have notes made, and we could take action on them now.

MR. ADAMS: I think we voted to adjourn at 1 o'clock.

THE PRESIDENT: That time has arrived now.

MR. ADAMS: I move we adjourn.

The motion to adjourn was carried.

## SESSION OF THURSDAY AFTERNOON.

The Convention was called to order at 3:20 P.M.

THE PRESIDENT: When we left off this morning to go to dinner, Mr. Rhodes had the floor. I will call on Mr. Rhodes to finish what he had to say this morning.

MR. RHODES: I understand there is a motion to be presented, and I yield the floor until this motion has attention.

MR. DAY: Mr. President, inasmuch as an invitation has been extended by the Pennsylvania Railroad to this convention to have an excursion anywhere they may see fit to go, I move that the convention accept the hospitality of the Pennsylvania Railroad, and go to Atlantic City. A suggestion would be in order as to what time we would like to go.

MR. MACKENZIE: I suggest Saturday at 9 o'clock.

THE PRESIDENT: It is moved and seconded that the invitation of the Pennsylvania Railroad Company to go on an excursion to Atlantic City, on Saturday morning at 9 o'clock, be accepted.

The motion was carried.

THE PRESIDENT: Now I think Mr. Rhodes is in order.

MR. RHODES: Mr. Chairman, before we adjourned, I was talking on the question of submitting these rules to letter ballot, and I shall offer an amendment to that; but I want, before doing so, to call attention to a few more points in the report. I have spoken of the importance of testing a train before it leaves a station, by exhausting all the air out of the train pipe. I have also called attention to the short piston travel on the tender. Now let us consider the question of the short travel on passenger cars or on freight cars. Suppose we have a train of eight or nine cars, with only four inches travel. When seventy pounds pressure from the auxiliary reservoir is turned on to the cylinder we get nearly seventy pounds into that cylinder. Now, what would be the effect when we make a service application and only turn a small portion of this air in? The leakage groove in the cylinder is three inches long. The result would be that the piston would not travel beyond the leakage groove, the brakes would go on and then go off again. I do not understand why that feature has been overlooked. It is probably through the hurry of getting something up which has not been thoroughly looked into. There are a few other points which I think would be well to consider. On page 4

the instructions say that with freight trains which are only partially equipped with an air brake great care must be used to apply the brakes with only six to eight pounds reduction and allow the slack of the train to be taken up before further application is made. That is to say, you apply the brake first and let the slack run up. Now surely that is wrong. The way is to let the slack run up and then apply the brakes. A little below that it says :

In making a service stop always release the brakes a short distance before coming to a dead stop, except on heavy grades, to prevent shocks at the instant of stopping.

Even on moderate grades it is best to do this. But suppose it is in a partially equipped train. Suppose hand brakes are applied in a partially equipped train ; if you release the brakes before you come to a stop, with the hand brake applied, you are going to break your train every time. I have still another point on pages 11 and 12 which is quite important. In regard to draining, the recommendation is that the main reservoir must be drained of any accumulated water after each trip, and the drain cup in train pipe under the tender frequently. Now I would like to see that changed so that it would read that the train pipe under the tank and the engine must always be blown out thoroughly before connecting with the train. The dirt from the pump and the oil and grease and sweat from the water and the rust all collect in there and all that dirt goes right into the baggage car. You can see the result by comparing the triple valve on the baggage cars with the triple valves on the Pullman cars, or get the man to put his hand down to the rear hose and let the blow go against his hand and see all the dirt that comes there. I do not want to be thought to criticise this report severely. If you could see the notes in my book you would see such comment as "excellent," "very good," "never thought of this." But there are some other points that want to be gone over a little more thoroughly than the committee in their very good report have done ; and I would offer in amendment to the present resolution that the report of the committee be accepted and published in our proceedings, but referred to a committee to report on again at the next annual convention to submit for adoption. It seems to me that that will still give us the benefit of the report as it now appears and will also enable us to go over this matter a little more thoroughly than we have been able to do. In selecting the committee I would advise that men be selected who have air-brake cars and instructors on their line. The information we can get from these instructors



is very great. I do not want the members to think that this information I have is over and above that of the committee. I have got these points from the men on our road who have had the matter of instruction under their immediate supervision.

MR. CASANAVE: I second the amendment.

MR. BARR: With the permission of my seconder I will accept the amendment.

THE PRESIDENT: Gentlemen, you have heard the amendment of Mr. Rhodes, what shall we do with it?

MR. BARR: As I understand it, the motion now stands that the report be received and printed in the proceedings and referred to a committee for further report at the next meeting.

THE PRESIDENT: All in favor of that will signify by saying aye.

The motion was carried.

The report of a committee to which an item in the Rules of Interchange had been referred at the previous session was here taken up and acted upon; after which the regular business of the convention was resumed, as follows:

THE PRESIDENT: The report of the Executive Committee on Plan for Maintenance of Master Car-Builders' Coupler Standards, is next in order.

THE SECRETARY then read the following report:

REPORT OF THE EXECUTIVE COMMITTEE ON THE MAINTENANCE  
OF THE STANDARDS OF THE ASSOCIATION FOR COUPLERS  
OF THE MASTER CAR-BUILDERS' TYPE.

At the last convention, held at Old Point Comfort, in June, 1890, the following motion prevailed:

"That the Executive Committee ascertain whether the Master Car-Builders' type of coupler, now being furnished by the various manufacturers, conforms to the standards of the Association; that they submit a plan for the guidance of the Association in the maintenance of those standards, and that the Executive Committee be empowered to issue gauges, templets or special instructions for maintaining these standards prior to the next convention, if they find it advisable to do so."

In pursuance of these instructions the Executive Committee appointed a sub-committee from among its membership, consisting of Messrs. Chamberlain, Barr and Grieves, to take up the details and ascertain whether the couplers now being furnished by the various manufacturers conform to the standards of the Association, and to propose a plan for the guidance of the Association in the maintenance of these standards. This sub-committee performed its duties and reported to the Executive

Committee on May 7, 1891, after having made reports of progress at each meeting of the Executive Committee held prior to that date.

The Executive Committee submits below the report of its sub-committee, as the report of the Executive Committee, as follows :

*To the Executive Committee of the Master Car-Builders' Association :*

Your special committee appointed to ascertain whether the Master Car-Builders' type of coupler, now being furnished by the several manufacturers, conforms to the standard of the Association, and to submit a plan for the guidance of the Association in the maintenance of these standards, would respectfully submit the following report and drawings :

On October 1, 1890, the duties of your committee were made known to the several manufacturers of vertical plane couplers, by circular letter and publication in mechanical papers, and manufacturers were requested to send to the chairman of the committee at Buffalo, N. Y., a sample coupler and drawings of same.

In response to this request, the committee received the following :

- Janney Coupler and blue prints, from McConway & Torley, Pittsburgh, Pa. (Fig. 1.)
  - Gould Coupler and blue prints, from Gould Coupler Company, Buffalo, N. Y. (Fig. 2.)
  - Dowling Improved Coupler and blue prints, from the Standard Car Coupling Company, Troy, N. Y. (Fig. 3.)
  - Van Dorston Coupler and blue prints, from A. W. Van Dorston, Washington, D. C. (Fig. 4.)
  - Kling Coupler, from Kling Automatic Coupler Company, Louisville, Ky. (Fig. 5.)
  - Automatic of California (Fox Patent), Coupler and blue prints, from the Automatic Car Coupling Company, Chicago, Ill. (Fig. 6.)
  - Paragon Coupler and blue prints, from the Paragon Coupling Company, Newark, Ohio. (Fig. 7.)
  - Robert-Eastwick Coupler and blue prints, from Frederick Robert, New York. (Fig. 8.)
  - The Buckeye Coupler and blue prints, from the Timms Automatic Car Coupler Company, Columbus, Ohio. (Fig. 9.)
  - Trojan Coupler and tracing of lines, from Burden, Renshaw & Co., Troy, N. Y. (Fig. 10.)
  - Thurmond Coupler and drawing, from Thurmond Car Coupling Company, New York. (Fig. 11.)
  - Stilger & Strosler Coupler and drawings, from Stilger & Strosler Automatic Coupling Company, Louisville, Ky. (Fig. 12.)
  - Smillie Coupler, from the Smillie Coupler Company, Newark, N. J. (Fig. 13.)
  - Mather Coupler, from A. C. Mather, New York. (Fig. 14.)
  - Hinson Coupler and blue prints, from Hinson Car Coupler Company, Chicago, Ill. (Fig. 15.)
  - Union Coupler, from Union Coupler Company, Philadelphia, Pa. (Fig. 16.)
  - Barnes Coupler, from Lucien Barnes, Syracuse, N. Y. (Fig. 17.)
  - Niagara Coupler, from James F. Gluck, Buffalo, N. Y. (Fig. 18.)
- Your committee also received the following, upon which they were unable to take action, on account of sample couplers not being furnished :
- Communication describing a vertical plane coupler not yet completed, from Roberts Hardware Company, Denver, Colo.
  - Communication describing vertical plane coupler and rough sketch, from C. C. Lane, New York.
  - Communication relating to Chicago Coupler, from C. A. Schroyer, Chicago, Ill.
  - Communication describing vertical plane coupler, from G. R. Hoffman, Philadelphia, Pa.
  - Communication from Beals Railway Brake Company, New York.
  - Copy of report in *Railway Register*, from St. Louis Car Coupler Company, St. Louis Mo.
  - Communication and patent papers from Damon D. Shaw, Big Bend, Kan.
- The results of examination of couplers submitted are set forth in cuts herewith, in which Figs. 1 to 18 show the contour lines of the various couplers submitted, as determined by casts taken from the samples sent to this committee. In these cuts, the standard contour lines as prescribed in the annual report of the Master Car-Builders' Association of 1890 are shown in dotted lines.

Fig. 19 shows all other measurements taken from the couplers submitted, in tabulated form as illustrated, in which tabulated form the standard measurements as prescribed by the Association are given for comparison. (See in back of book.)

For obvious reasons your committee would recommend that a maximum and minimum limit be established for the several parts of rough coupler castings.

The production of templets and gauges combining simplicity and efficiency for the determination and maintenance of standards, has been somewhat perplexing, and your committee may not have devised the best forms of gauges, but they illustrate the points which need to be gauged, and it submits the gauges as shown and applied in Figs. 20 and 21. (See in back of book.)

Fig. 20 shows minimum gauge or templet, for contour lines of coupler, and at designated points on gauge the variation, in figures, to be allowed from this minimum gauge for maximum measurements.

Fig. 20 shows, also, in full lines, the proposed gauge in place; in dotted lines, the Master Car-Builders' Association standard contour; in broken lines, the maximum variation to be allowed.

Fig. 21 shows gauge to determine all other measurements of Master Car-Builders' standard coupler as applied.

Respectfully submitted,

E. CHAMBERLAIN,  
E. W. GRIEVES,  
J. N. BARR,

*Sub-Committee.*

The Executive Committee did not find it expedient to issue any gauges or templets prior to this convention, but it would recommend that the gauges mentioned and illustrated be used by the members of the Association to ascertain whether couplers furnished them are near enough to the standard or not, and that proper limits of variation be adopted as the standard limits of the Association.

JOHN KIRBY,  
T. A. BISSELL,  
E. CHAMBERLAIN,  
J. N. BARR,  
E. W. GRIEVES,  
G. W. DEMAREST,

F. D. CASANAVE,  
W. H. DAY,  
JOHN S. LENTZ,  
R. C. BLACKALL,  
J. W. MARDEN,  
*Executive Committee.*

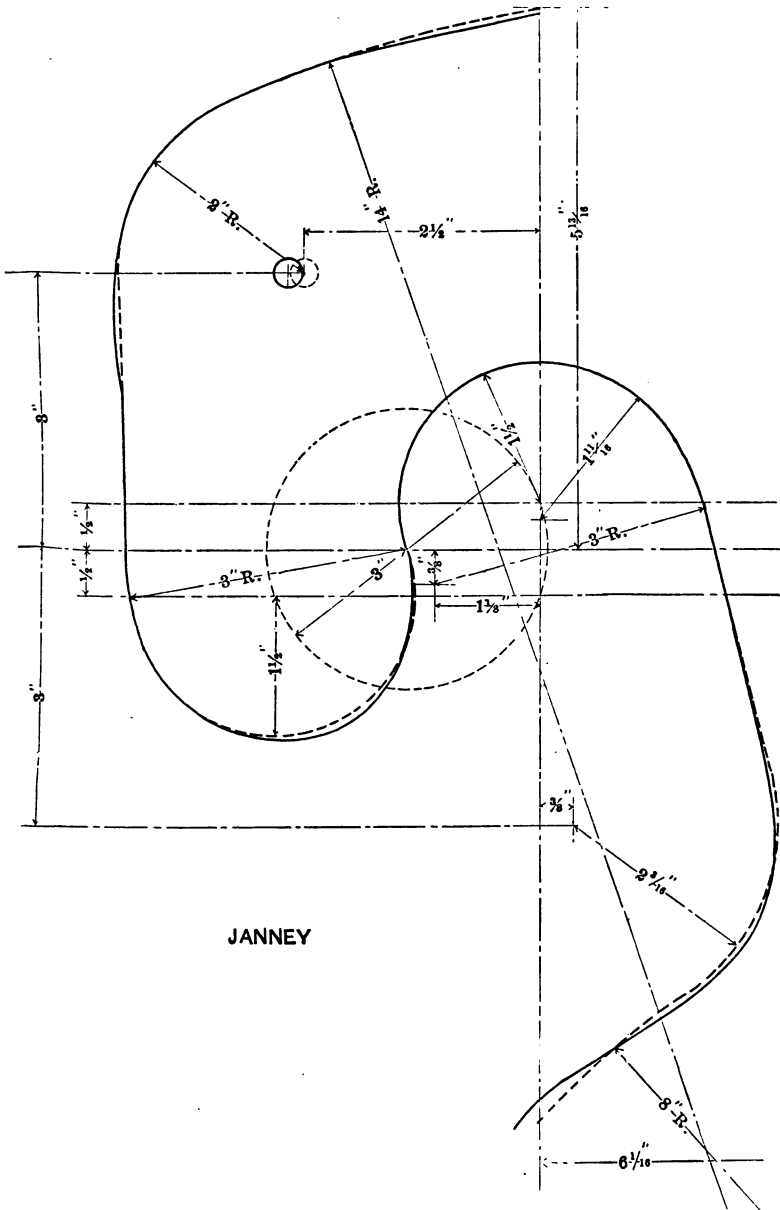


FIG. 1.

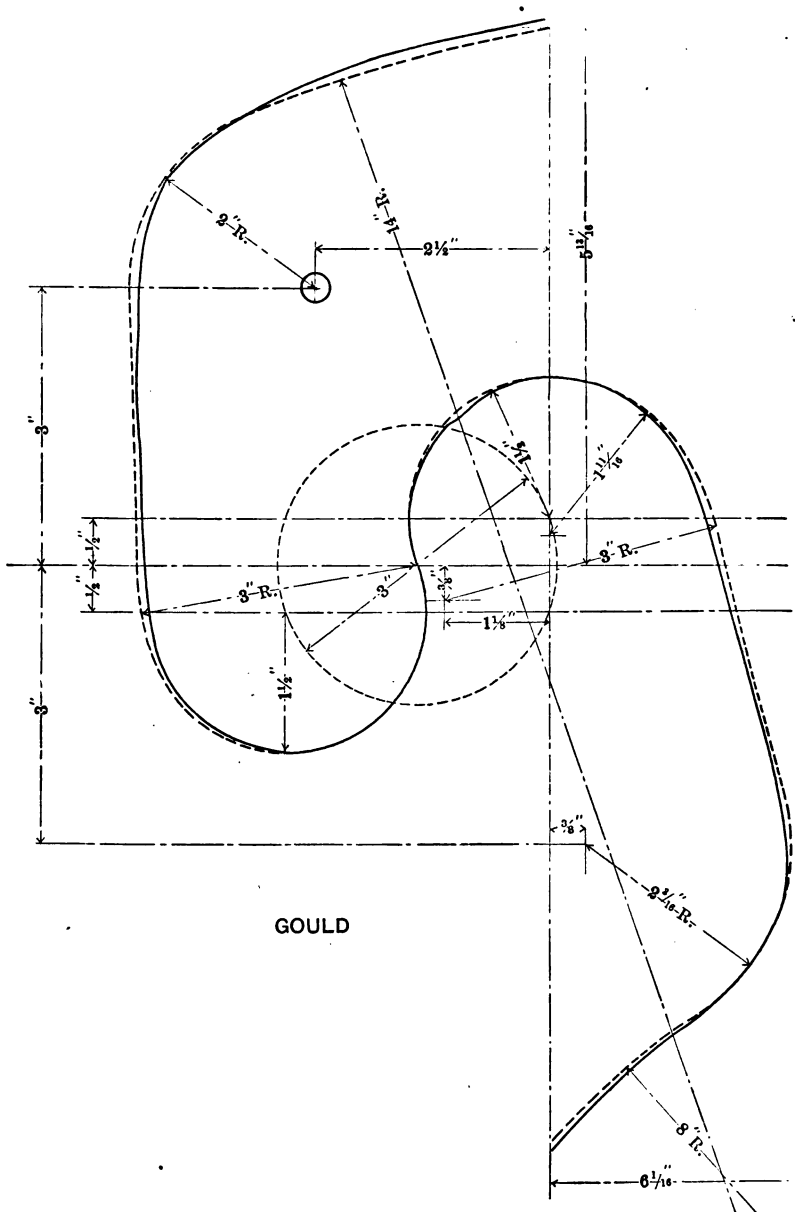


FIG. 2.

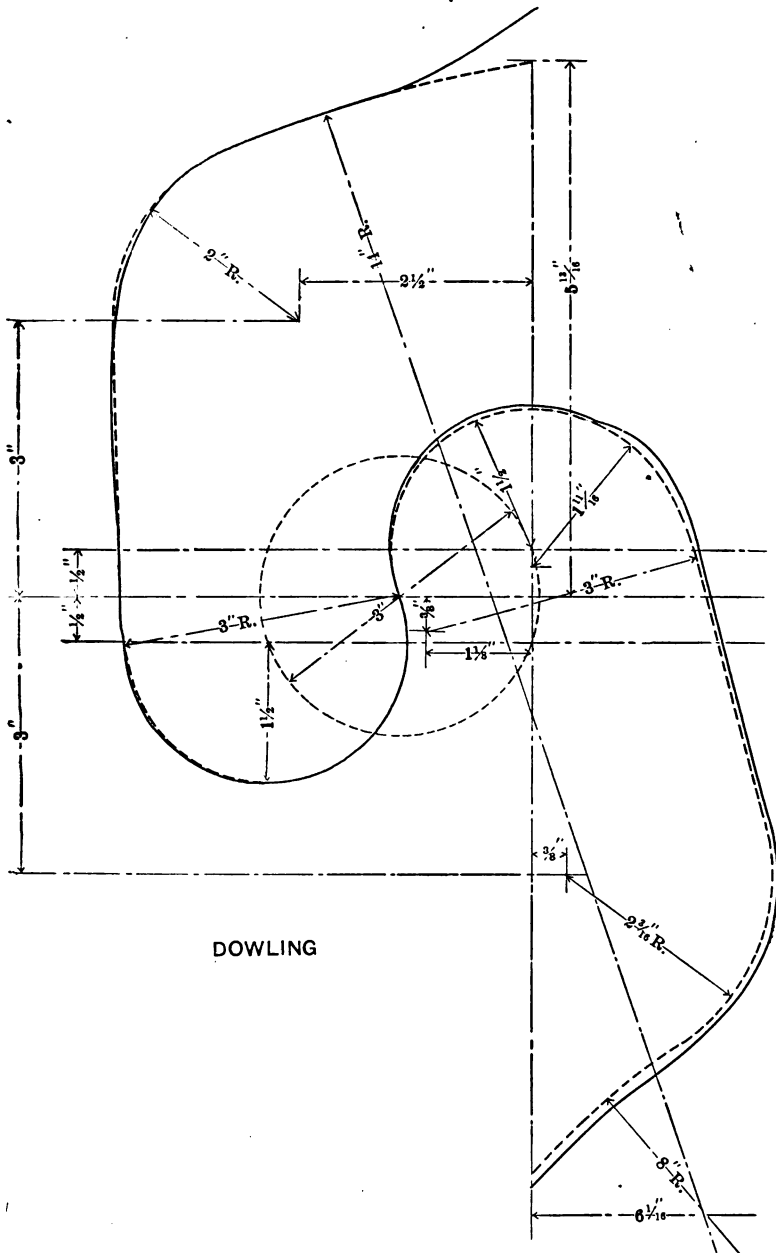


FIG. 3.

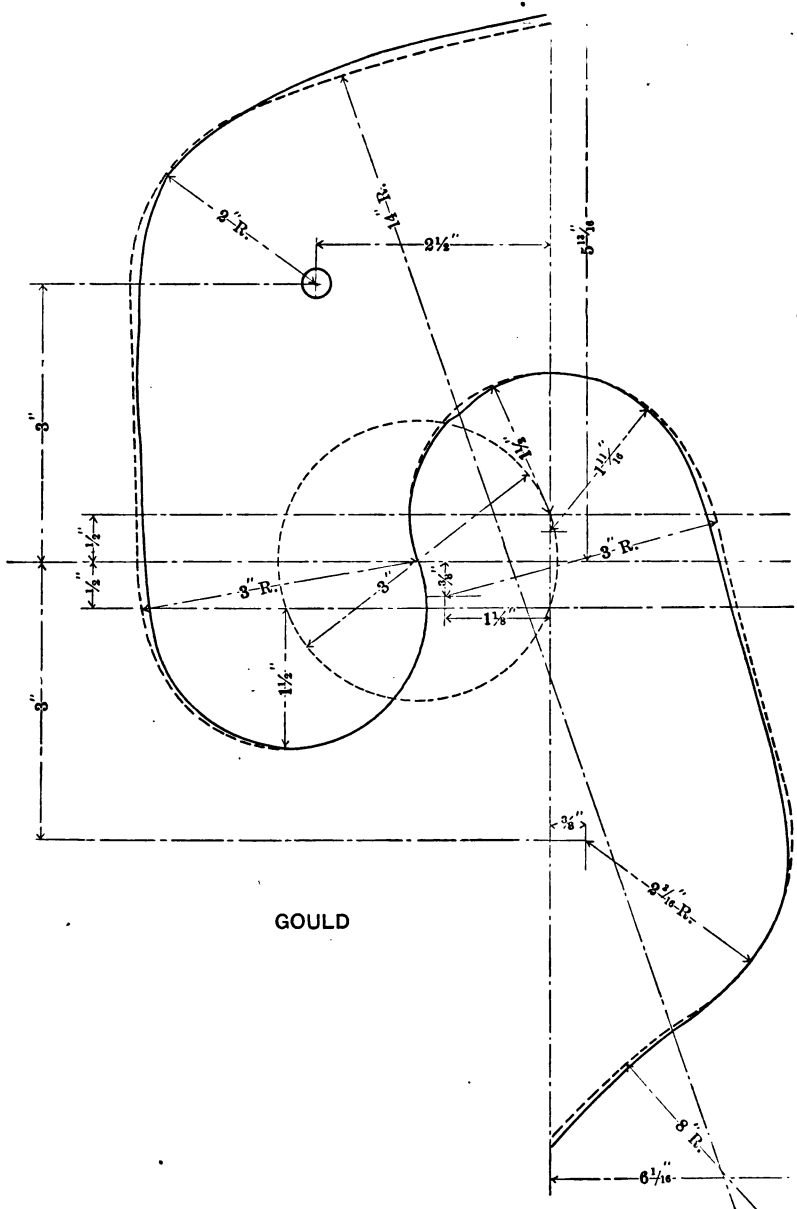


FIG. 2

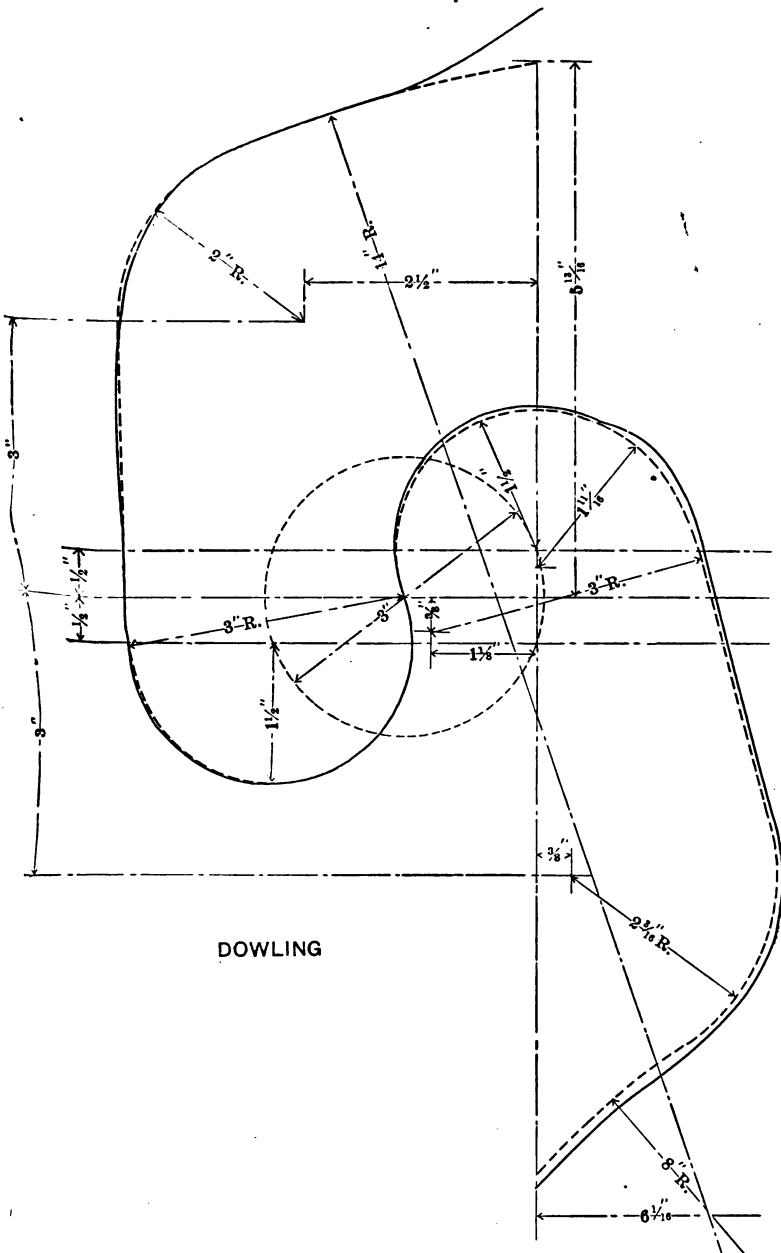


FIG. 3.



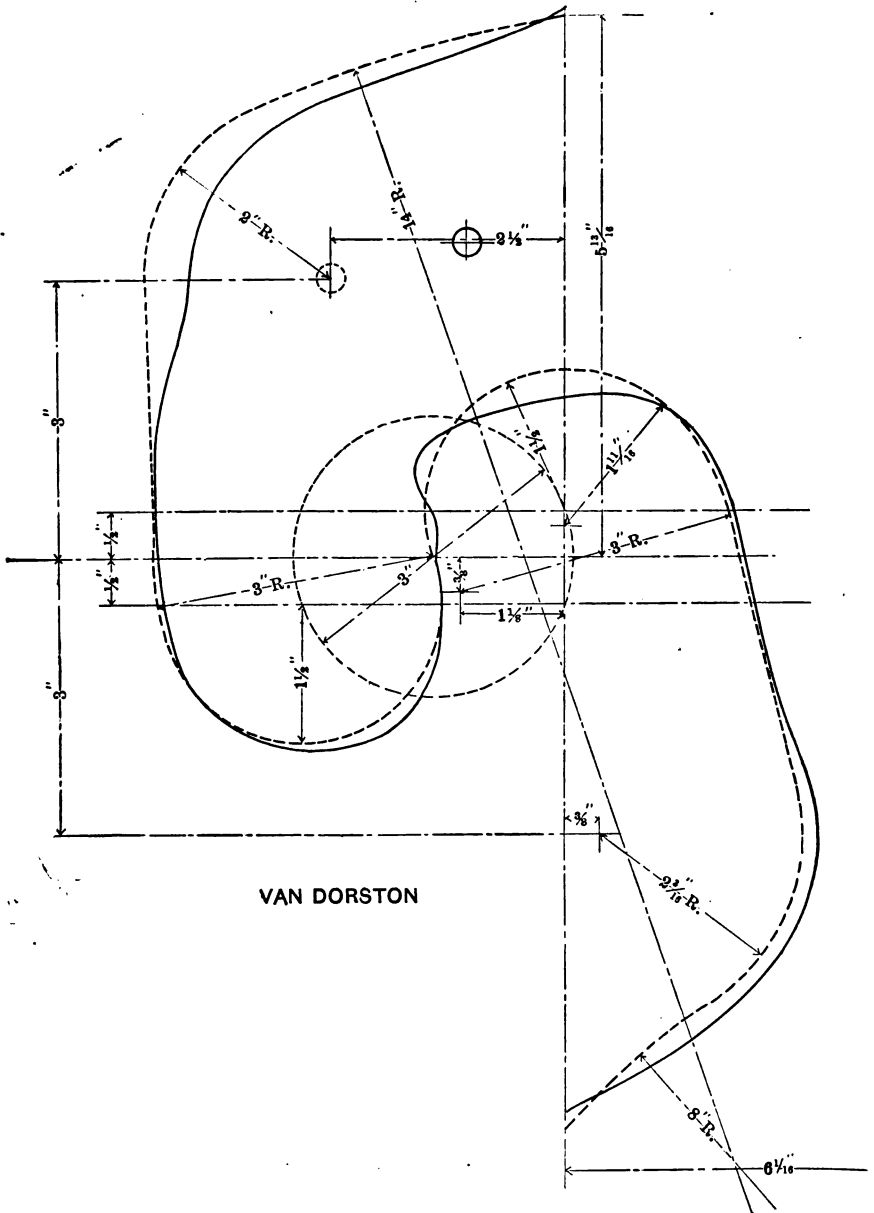


FIG. 4.

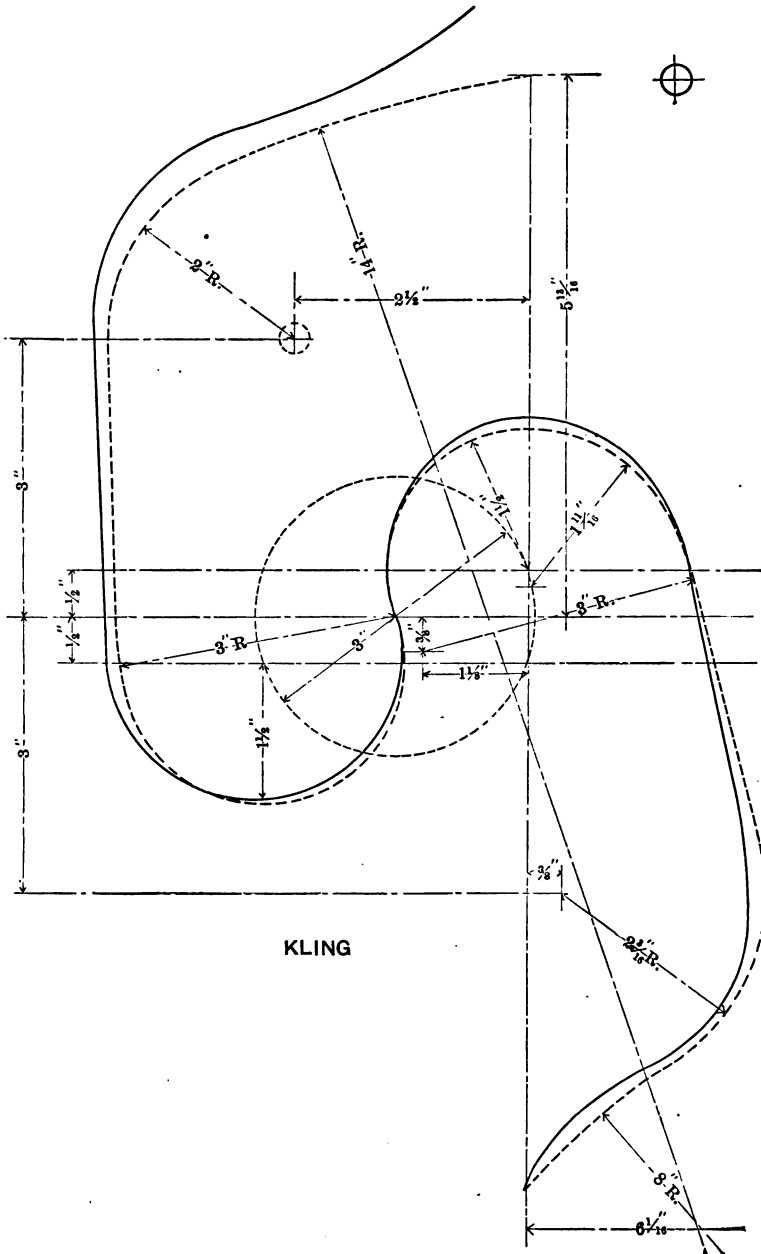


FIG. 5.

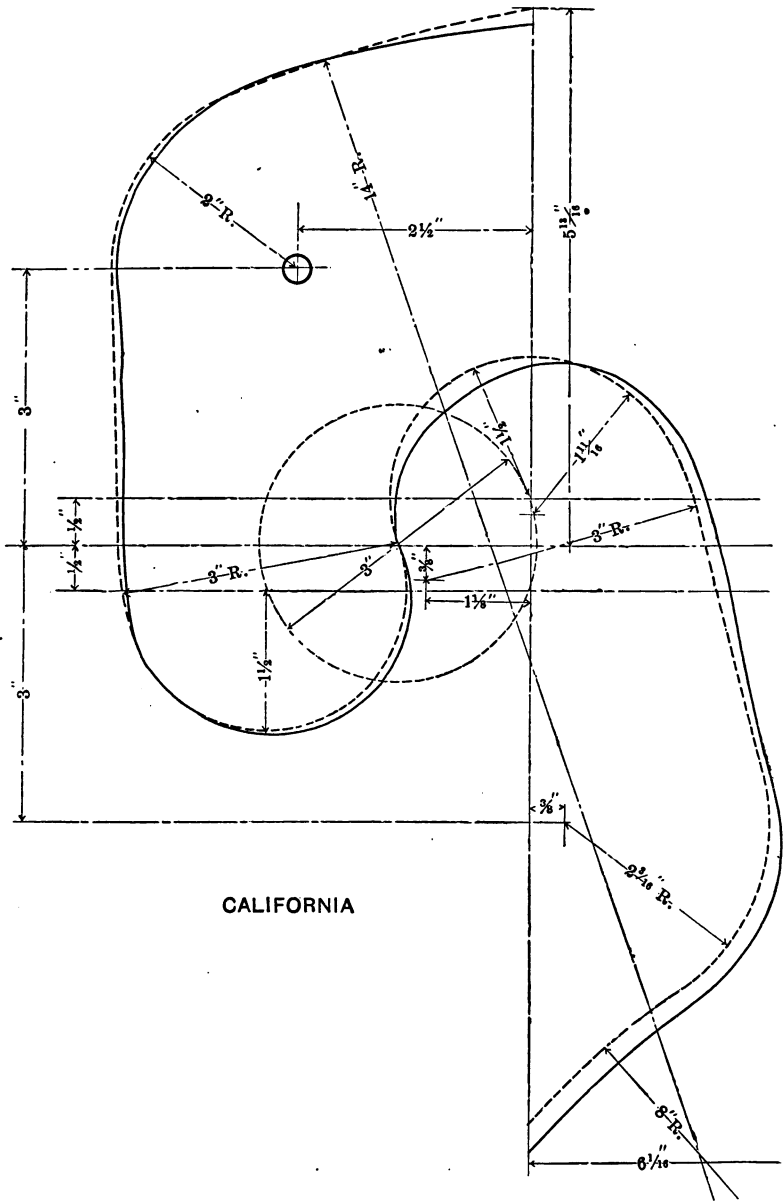


FIG. 6.

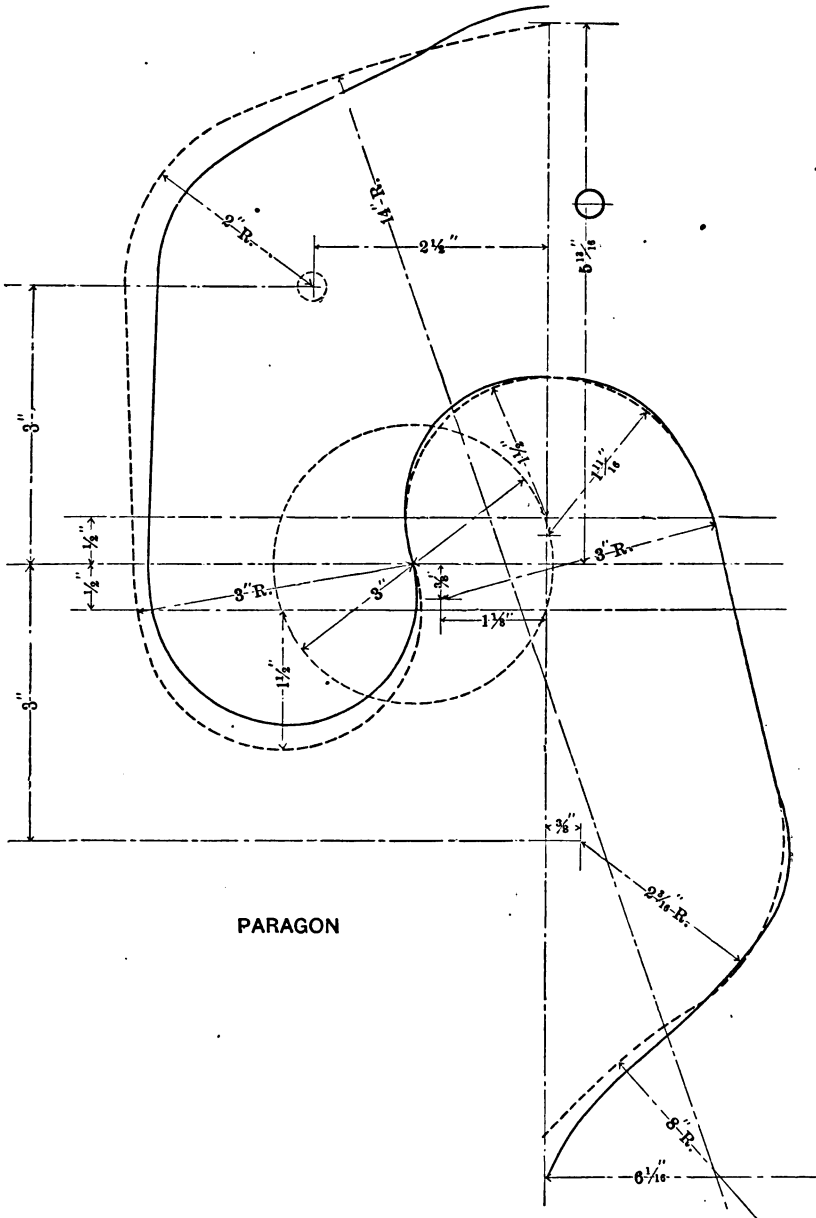


FIG. 7.

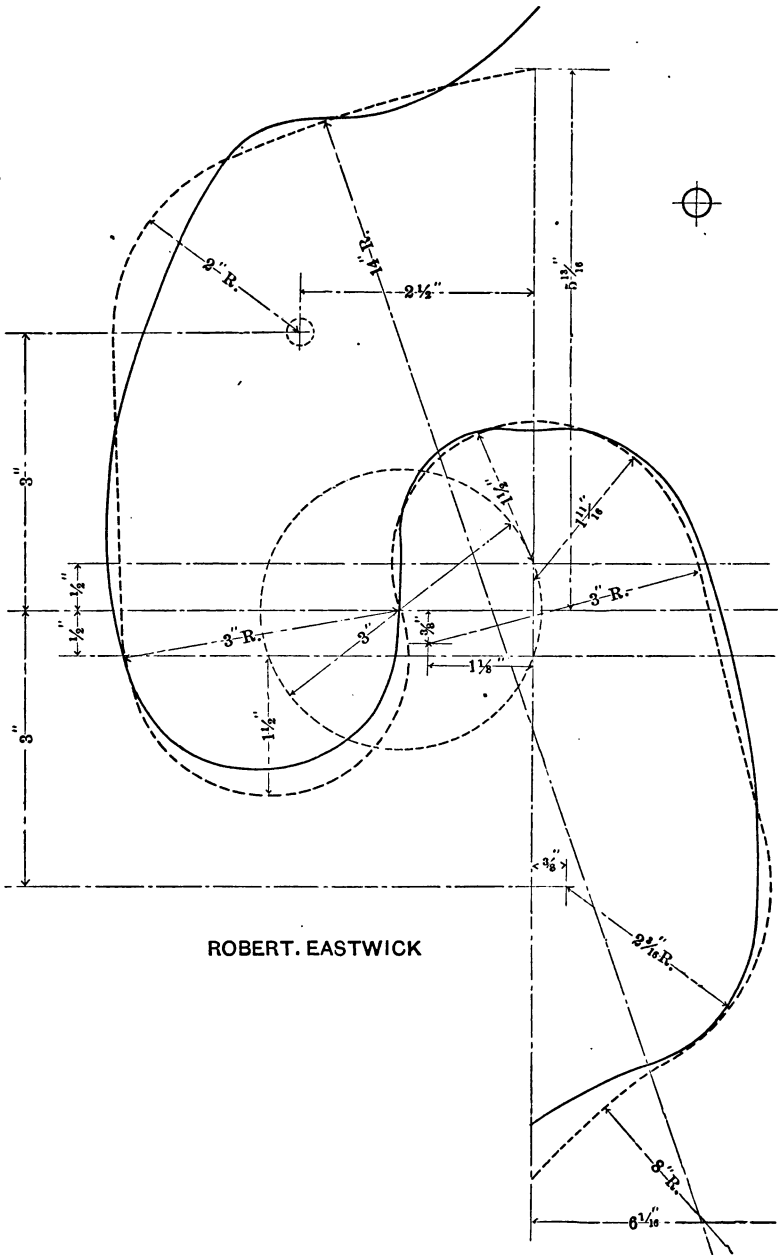


FIG. 8.



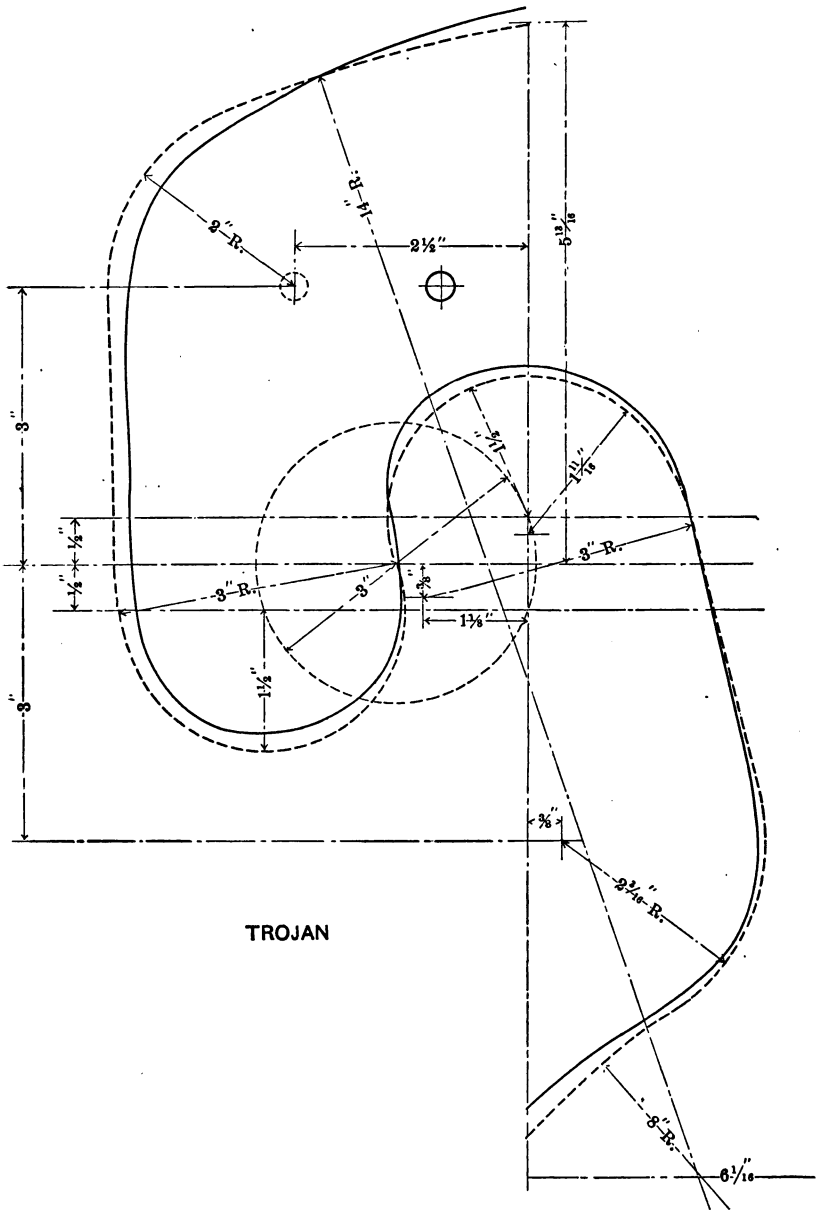


FIG. 10.





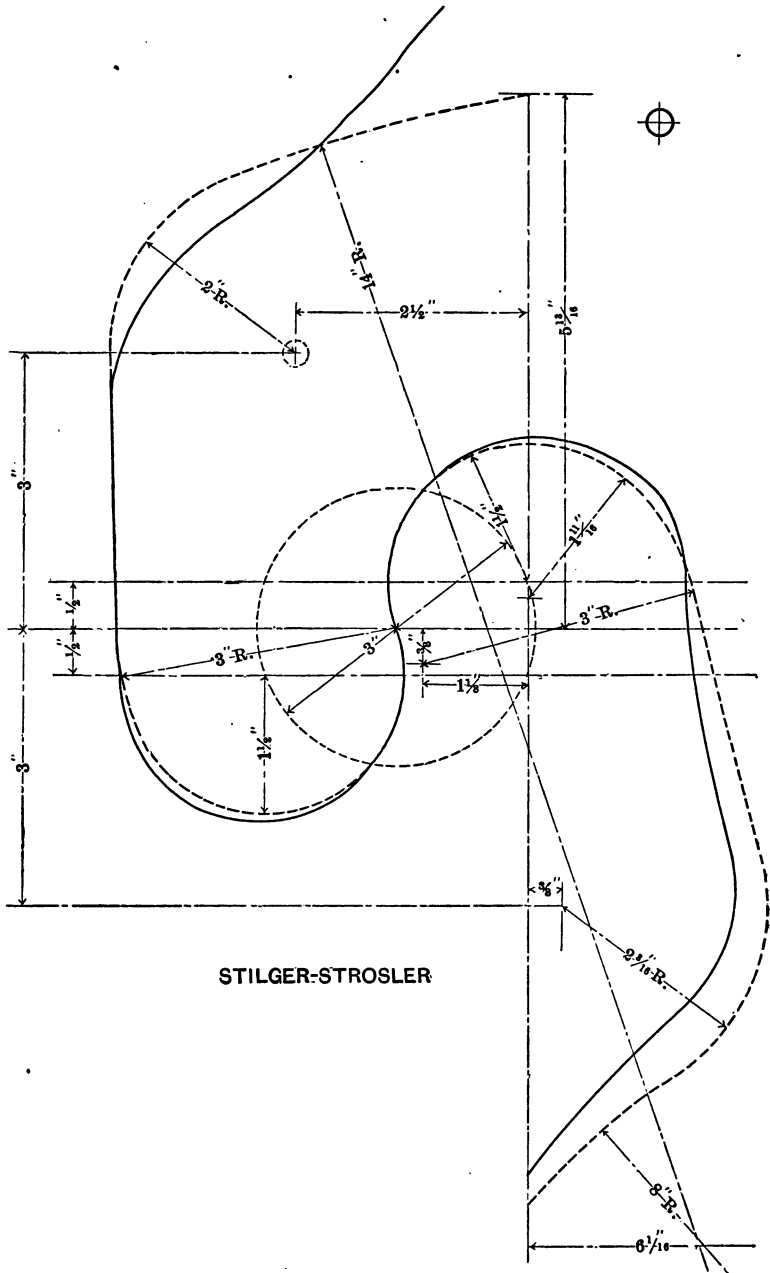


FIG. 12.

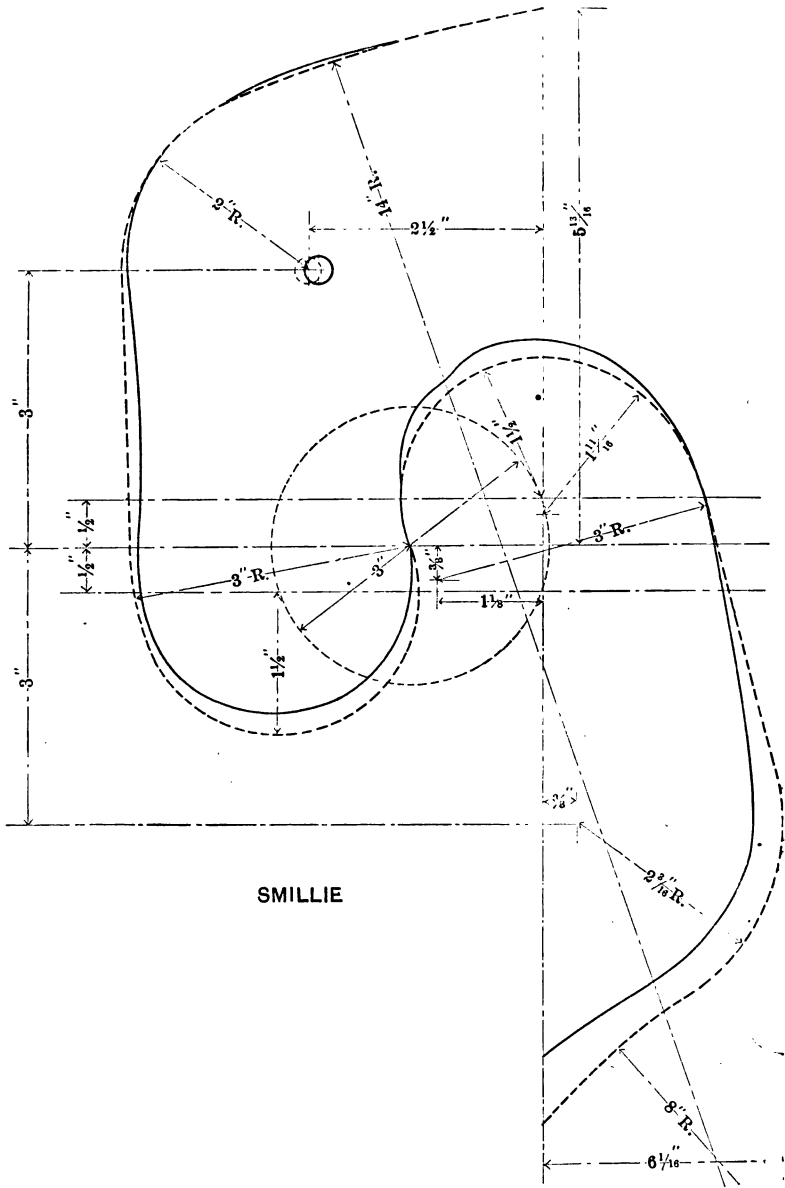
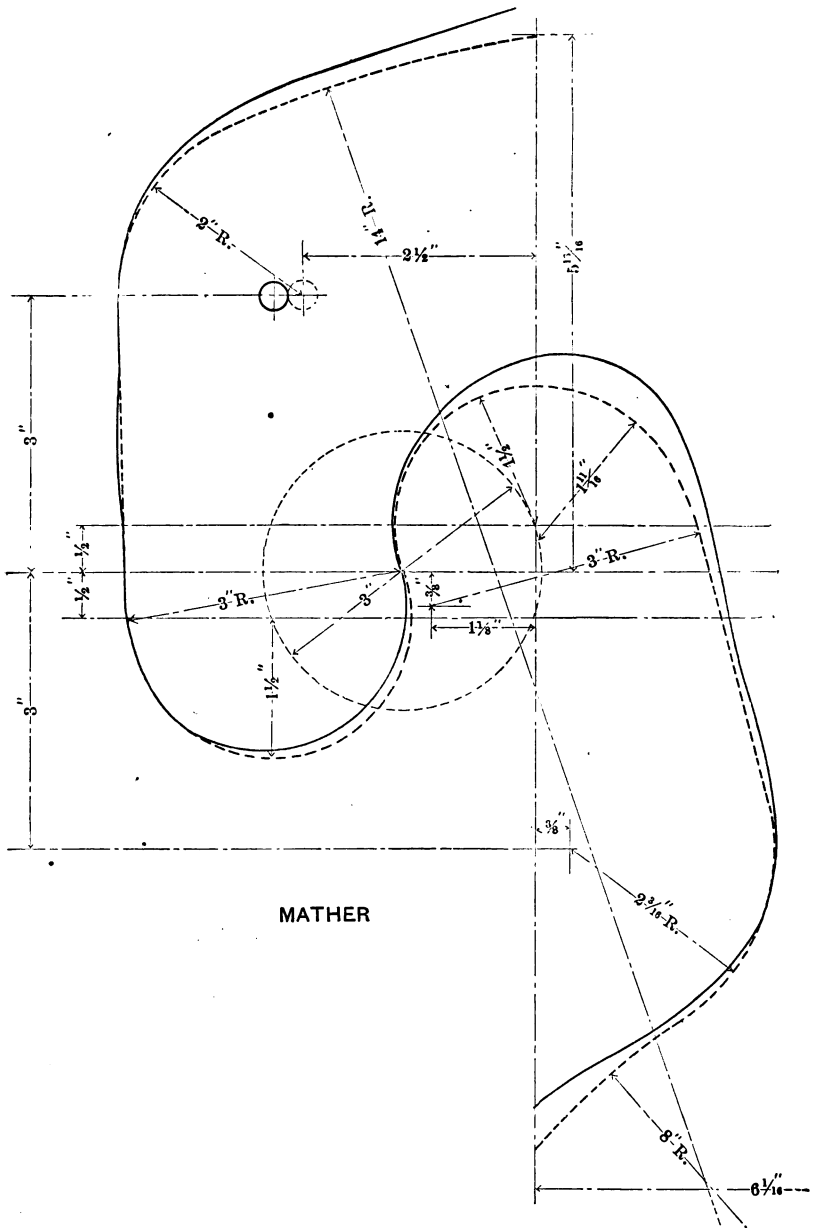
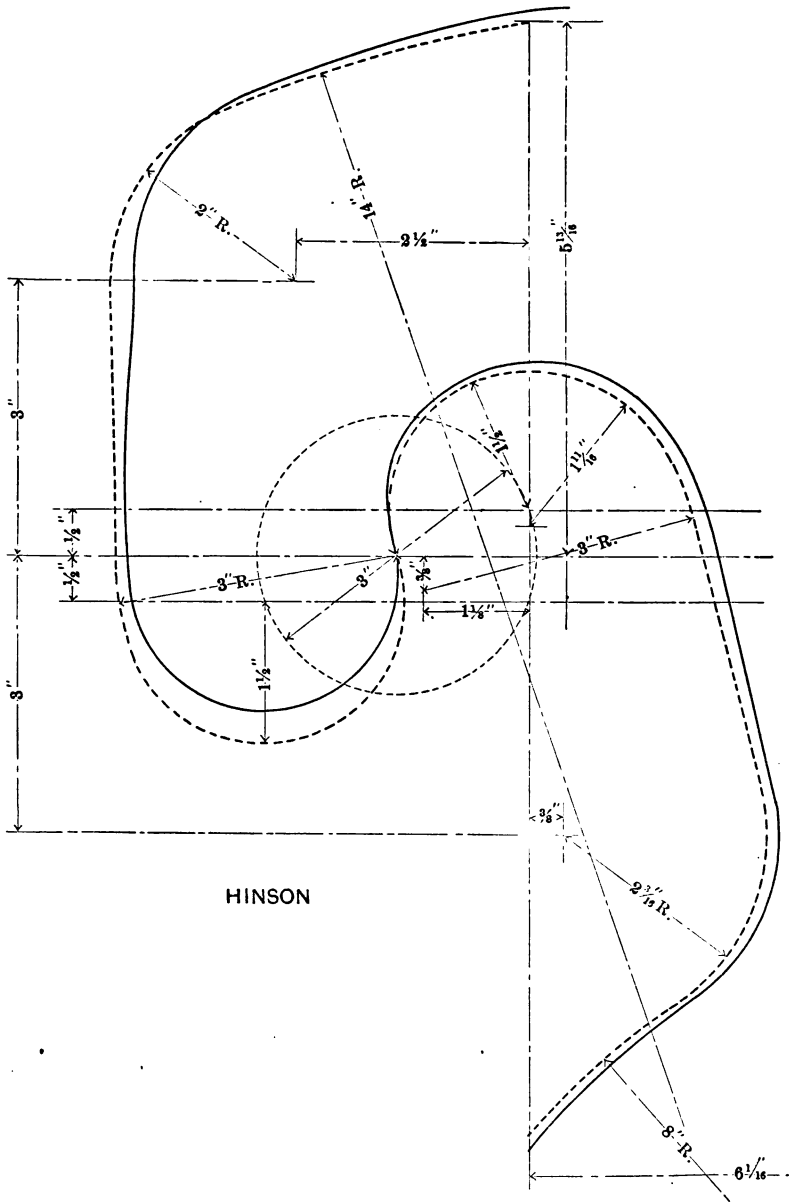


FIG. 13.





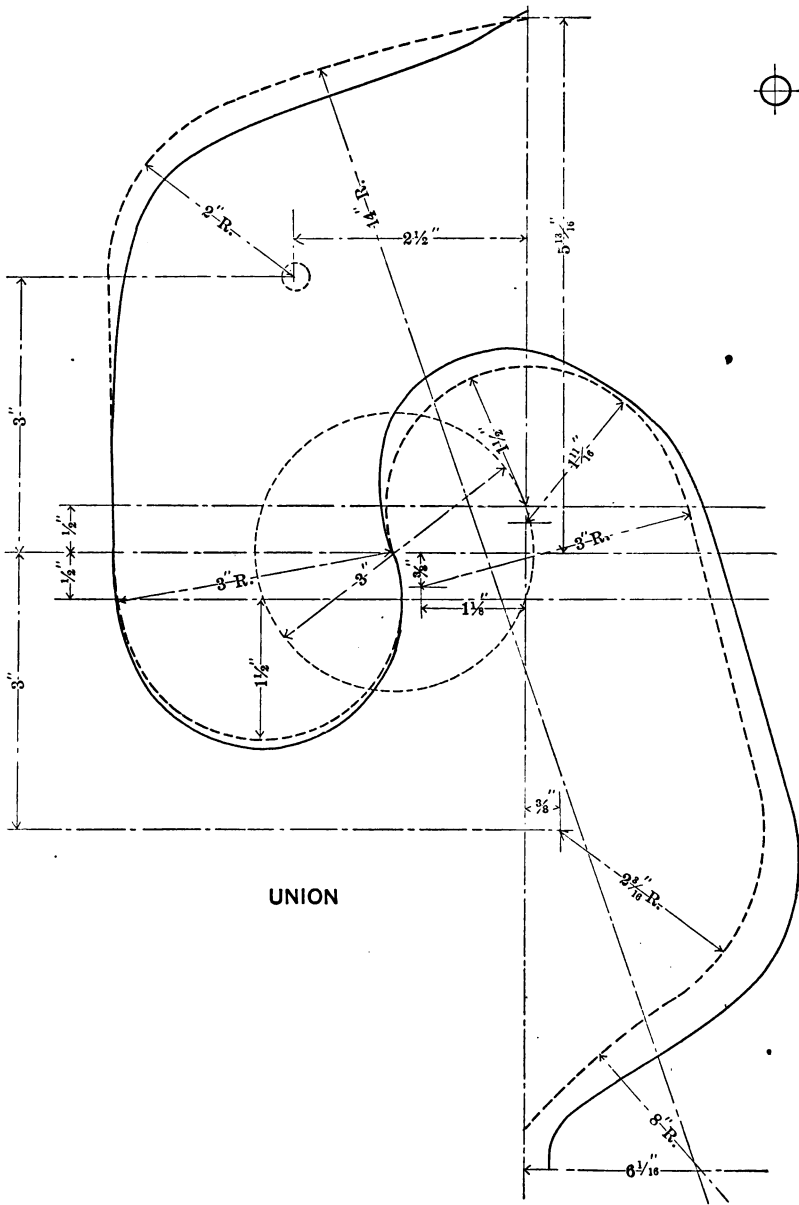


FIG. 16.

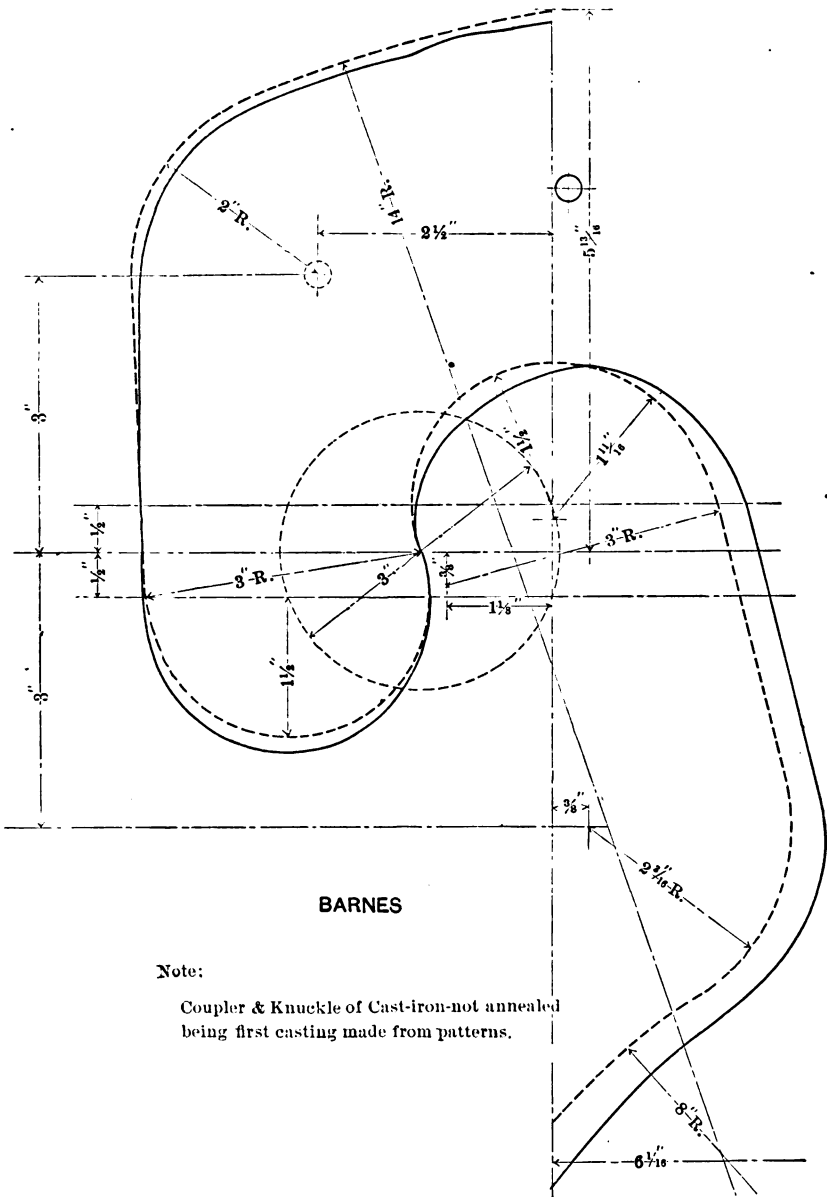
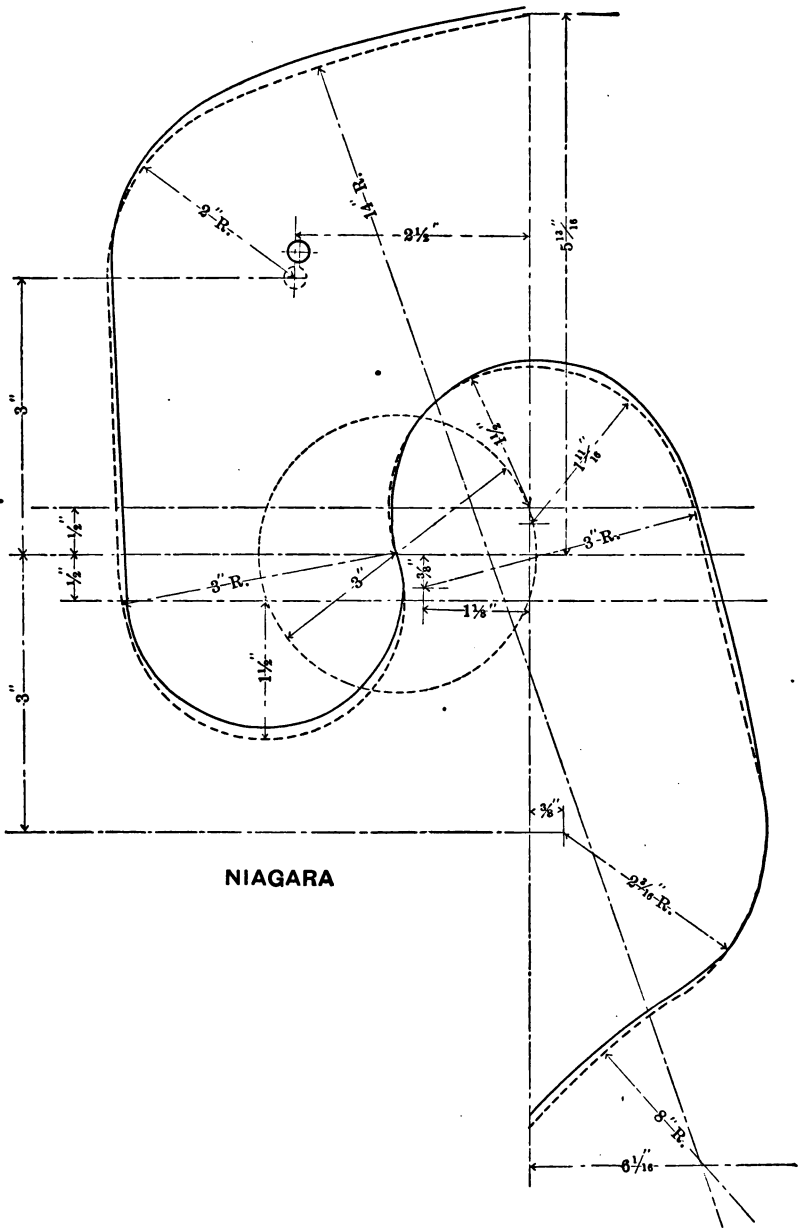


FIG. 17.



## DISCUSSION.

On motion the report was accepted.

MR. CASANAVE: Now, Mr. Chairman, this does not leave the matter settled yet. Gauges have been submitted. The question is, shall they be adopted or not?

MR. BARR: I move that it is the sense of this Association that these templets and gauges should be tested during the coming year by as many as possible, with a view to determining their practicability.

The motion was carried.

MR. E. CHAMBERLAIN: That disposes of the gauges very nicely, but what are the coupler manufacturers going to do about the maximum and minimum limits? I suppose it would be very valuable to know whether the coupler is going to sell or not. I do not want to say much upon this question, because I have had to work too hard at it. It seems to me that is a very important question.

MR. WAITT: It seems to me that this subject has now been presented to us in a way where it will give us food for a considerable thought and for examination which possibly many of the representatives here have not made. It seems to me we are hardly prepared to take definite action at this convention on fixing the maximum and minimum limits at which we will accept the Master Car-Builders' type of coupler, and it seems to me, in view of the motion to have the templets tried and experimented with during the coming year, that it would be wise, and I would make a motion, that a committee be appointed to consider this subject during the coming year, communicating with the various roads and getting their recommendations, and that they submit at the next meeting some proposition to limit the Master Car-Builders' type of coupler to the proper dimensions, as may be suggested.

The motion was seconded.

MR. CASANAVE: Before the question is put, it seems to me that that leaves the matter in bad shape for another year. The motion voted upon a little while ago made these templets practically standards of the Association for the coming year, yet the motion, I think, did not carry the understanding that the Executive Committee should issue blue prints or drawings of gauges for the manufacturers to be governed by for the coming year. While Mr. Waitt's motion is perfectly acceptable, it seems to me that something might be incorporated in it to have the gauges presented at this meeting issued



by the Executive Committee and used by the manufacturers for the following year. Then let the committee go to work and devise something better if it can.

MR. WAITT: I would accept such an amendment if it be put that these gauges be submitted as the sense of the Association — the extreme limits that they give as being the sense of the Association — that the manufacturers should not go outside of those limits.

MR. BISSELL: I would offer as a motion that Mr. Chamberlain send his templets to the Pratt & Whitney Company, and that all templets that are made be made by that company and be distributed to the different railroads, so that they may be all uniform and all be working to the same patterns.

MR. E. CHAMBERLAIN: I wish to say that the Secretary of this Association has in his possession the exact, full-sized drawings of all of those templets, which are quite as accurate as any drawings that I could furnish Pratt & Whitney.

MR. BISSELL: My suggestion was that you furnish these templets to Pratt & Whitney to make steel templets by. Drawings will vary.

MR. E. CHAMBERLAIN: If the figures are given, the drawings cannot vary very much.

A member seconded Mr. Bissell's motion.

MR. CASANAVE: I would amend, that the templets recommended by the committee and adopted by the Association be referred to the Executive Committee, and that they be requested to make necessary arrangements to have proper gauges provided for the use of manufacturers, and railroads if necessary.

The motion was seconded.

MR. BISSELL: I will accept that amendment.

MR. WAITT: I would ask in what connection the amendment just made comes in — what relation it has to the original motion. Is it to be an addition to that, or is it a substitute for that, or how is it to be understood?

MR. CASANAVE: My object was to make the standard now adopted of some value for this coming year, but I intended the amendment should be coupled with Mr. Waitt's motion that the subject be further referred to a committee, to report at the next meeting. If the committee finds it best to recommend some changes, well and good. Now if Mr. Waitt accepts the amendment, and puts it in the motion, I think it is all that is necessary.

MR. BISSELL: I would like to inquire what that does with the templet? Does it leave us without any, or do you think we ought not to have any?

MR. CASANAVE: I think we ought to have them.

MR. BISSELL: I understood you to amend my motion placing it in the hands of the committee to provide such templets as they thought necessary.

MR. CASANAVE: The motion as amended, it seems to me, would be this: Mr. Waitt moves that the matter of templets be referred to a committee to report at the next convention. But that in the meantime, the templets now reported by the committee and adopted be referred to the Executive Committee to be used during this year.

MR. WAITT: In making the motion originally, my idea was that we were not fully prepared to say what the proper limit is, and I think so still, and that if the members would read the report and make some gauges for themselves—the figures are given quite clearly—and examine the couplers for themselves, that during the next twelve months we can know how to adopt a standard gauge so that we shall not have to change it every year when the convention comes along. I think we ought to go into these standards slowly rather than hastily, and be sure that we are right and then go ahead.

MR. BISSELL: If you leave that to the railroad companies they won't make them alike. If they are made by some company that is used to this fine work like the Pratt & Whitney Company, that will make them of hardened steel, they will come out alike.

MR. BLACKALL: I would like to inquire what the coupler companies are going to do this coming year. The Executive Committee may perhaps have these templets out next fall. During this time we are putting couplers on our cars. I think it is perfectly proper that the manufacturers should be furnished with templets.

THE PRESIDENT: Perhaps some one could suggest some way of furnishing the manufacturers with templets or proper information.

MR. BLACKALL: I think Mr. Casanave's motion covers the point except the time when the templets shall be furnished.

MR. CASANAVE: As I understand it, my amendment would be out of order because the report on the templets proposed by the Executive Committee has not yet been adopted.

MR. BARR: The motion was that the templet be used in the form presented by the committee and not formally adopted as the final

templet that is to be used by this Association. I think Mr. Casanave is fully in order.

MR. ADAMS: I think, Mr. President, with Mr. Bissell, that it is very important that templets of any description should be made by some reputable house—Pratt & Whitney, or some other—that the Executive Committee may see fit to employ. They should put those drawings in the hands of somebody and the templets should be made by some one party and the coupler manufacturers should be notified that they must obtain the templets from that party. Then we will get a uniform thing ; otherwise we will not. Our templets that have been made before by one and another, each man making them for himself, have that variation which is just enough to disturb us, as Mr. Bissell says, and it follows so every time, too.

MR. CHAMBERLAIN: I think that we are all pretty well agreed that some one company should make the templets. But it seems to me before we get the templets made that we ought to have a design to work from. We are making a thing we have not got. I must say that I am not in a position exactly, but still I want to say a word for those coupler men. They are quite a large body. They probably have something invested in the business, because they are here today and it is costing them money to be here, and they certainly, as stated by Mr. Blackall, want to know what they have got to do. I want to say, gentlemen, for your personal information, that about every coupler manufacturer in this country who sent a sample coupler to Buffalo, sent a committee with it, and I entertained them. Now I do not think any of the members of the Executive Committee want to do that for another year. But let us say to those gentlemen, now here is a maximum and minimum limit of some character — give them a foot, if an eighth of an inch is not enough. If we make any bad mistakes, then we can make the corrections and compel them to get out an entirely new set of patterns. But let us say something to them.

MR. DAY: I think, with Mr. Blackall, that it would be very necessary that this convention should arrive at some definite conclusion on this very important point. We have resolved to receive the report of this committee and adopt standards on the lines we have laid down. Templets should be made, in my opinion, because as has been very wisely said here, we are putting on couplers just as fast as we can, and unless we have some definite arrangement by which we know that we are right, it would be foolish on our part to continue putting on these couplers without some definite limits to be governed

by, and I heartily concur in what the gentleman has said about the templets going out now at this very time. It should be resolved at this convention that the templets should be made and sent out so that we shall know in the future exactly what we are to do. It would be throwing away time and material if in the next twelve months this committee should report back to this convention that those lines are all arbitrary and we will have to go over the same thing again, and that means money to the railroad companies. I think that the whole railroad world is looking on at this convention to see what we are going to do at this particular time. We have dilly-dallied over this coupler business until the people have become surfeited, and I say that they are looking at this convention today, and they ask themselves, what will it do? We have heard enough about this coupler question, and we now want to arrive at some definite conclusion in the matter by which we can go on in the future and equip our cars in such a manner as will be acceptable to the people at large, and I think that this thing should be settled right here today. There is no better time. I do not say that we can settle the matter as to what the coupler will be in the future, but we can get as near to it as possible, so that we can work with some degree of ease, and I would heartily support the motion that I believe has been made in reference to getting up these templets by some individual firm where they can all be made alike and sent out to the manufacturers, and I am satisfied that the railroad companies would feel decidedly more easy in the matter. (Applause.)

THE PRESIDENT: The motion is that the Executive Committee make necessary arrangements to issue templets in accordance with the recommendations of this report, for the use of manufacturers of the Master Car-Builders' couplers and railroad companies as needed.

Mr. WAITT: I rise to a point of order. I believe that was not the original motion. If that is an amendment I have nothing more to say in regard to it except that I should support it, but as it is just stated it is put as the motion. If it is the amendment I agree to it.

Mr. CLOUD: I have taken a good deal of liberty with those motions. I understood Mr. Waitt awhile ago to accept an amendment of Mr. Casanave's. I have tried to get a motion out of all these motions and that is what I made of it.

Mr. CASANAVE: That is the amendment now, is it?

Mr. CLOUD: Mr. Waitt will now have to say how much of his motion he wants to retain.

MR. WAITT : I will agree to that amendment, it being understood that it be coupled with my motion for the appointment of a committee to consider the subject another year.

MR. BLACKALL : I would like to offer an addition to the resolution—that the Executive Committee furnish the drawings within thirty days.

MR. BISSELL : The drawings are ready.

MR. LENTZ : I second Mr. Blackall's recommendation.

MR. BLACKALL : I withdraw that, if you intend to use the templates as now suggested.

MR. CLOUD : I would like to ask Mr. Waitt if he will withdraw his motion and let this take precedence, and if it does not cover all he wants, he can make another motion to cover the ground.

MR. WAITT : I am willing to have that done.

The motion was then put and carried.

MR. WAITT : Now, Mr. President, in order not to lose sight of what I had in view—the appointment of a committee to consider the subject another year—I will make a motion to the effect that a committee be appointed to consider the Master Car-Builders' coupler, to report at the next convention, recommending, if possible, some definite plan of action for limiting the dimensions and limits in which they shall be made.

THE PRESIDENT : Then you would recommend continuing the use of the couplers just as they are today for another year?

MR. WAITT : No—in accordance with the resolution that has just been passed.

MR. CLOUD : I would suggest that if it were put like this it would be less liable to be misunderstood: "That a committee be appointed to consider whether there are any further additions necessary or changes to be made in the limits which are now adopted."

MR. WAITT : That would be all right, and it would be acceptable to make the motion that way. I would explain my reason for being so anxious with regard to this. This country is being flooded with a large number of Master Car-Builders' type of couplers—some of them excellent, some of them miserable, and it seems that, unless we are going to be in just as bad a condition with the Master Car-Builders' coupler as we have been in times past with other classes of link-and-pin automatic couplers, something has got to be done to weed out

the poor ones and maintain the good ones, and I had hoped that at this convention something would be said or done toward the appointment of a competent committee to whom the types of Master Car-Builders' couplers could be submitted—a large committee and one which would be composed of men located on roads where they could give good physical tests in the testing department, as well as on the road, and that those which they recommended only would be acceptable standards of the Association.

MR. GRIEVES: I would like to amend the motion of Mr. Waitt to have that committee consider a standard size and form of tail-pin, as nearly every coupler maker in the country today makes his own size of tail-pin, and the consequence is that none of them are interchangeable.

MR. PECK: It is the same way with the knuckles—none of them are interchangeable.

MR. CASANAVE: As I understand the motion, it will give the committee power to investigate the entire coupler question. No matter what part they choose to investigate, it can be done under that resolution.

MR. CLOUD: The motion is that a committee be appointed to consider whether there are any further standards or limits necessary or desirable or any changes desirable in the limits now adopted for Master Car-Builders' couplers, and to report next year.

MR. E. CHAMBERLAIN: Before that motion is put I want to get all the credit I can for this committee. Mr. Barr worked particularly hard on this committee and is entitled to some consideration. I wish to call attention to the fact that this committee traveled farther in the direction mentioned by Mr. Grieves. It not only established all the measurements, giving a maximum and minimum limit therefor, but it established a maximum and minimum limit, as shown between the ribs of the coupler proper, giving a clearance for a certain size of tail-bolt. It also established a thickness of metal in the end or tail of the drawbar shank.

THE PRESIDENT: Now all in favor of the motion as it is put will signify by saying aye—those opposed, no.

The motion was carried.

THE PRESIDENT: Next in order is the report of the Executive Committee on Journal Box, Bearing, Wedge and Lid, for 60,000-pound.

~~cars~~ cars. Mr. Adams has a paper which he wishes to read to us in reference to the death of Mr. Verbryck, which we will hear first.

MR. ADAMS read the following :

*Mr. President and Gentlemen of this Convention :*

It becomes my painful duty to call the attention to the vacant seat of one whose face has been seen, and whose presence noted at each previous convention of this Association. Another and beloved associate and member has been summoned to associations where the great and the good receive merited reward. A few weeks since Brother B. K. Verbryck, of the Rock Island Railroad, received his orders for promotion from our ranks. In vigorous health, and in the time of business success he has been called from his labor. With expectations of a friendly greeting with us at this meeting he has been relieved, and we are pained at his departure. His death, about ten days since, most unexpected to his many friends, removes one of the projectors of this organization. A gentleman, he was held in the highest regard for skill in his profession, for integrity of character and for manly life. His zeal has been most untiring in the promotion of the great work with which this Association is charged. Be it therefore

*Resolved*, In the death of our brother, B. K. Verbryck, this Association has lost one who has filled its first offices of president, vice-president and committeeman with the highest credit to himself, and most acceptably to his associates, and to this Association. His death we deeply lament, and bespeak truest sympathy to his bereaved family, to his friends, and to the members of this Association.

*Be it further Resolved*, A copy of these resolutions be spread upon the record of this Association, and a copy be sent to the family of our brother.

MR. CASANAVE : I move that the resolution be approved as read, and disposed of as suggested in the resolution itself.

The motion was carried.

MR. CLOUD read the following report from the Executive Committee on Journal Box, Bearing and Lid, for 60,000-pound cars.

#### REPORT OF THE EXECUTIVE COMMITTEE ON JOURNAL BOX, BEARING, WEDGE AND LID, FOR 60,000-POUND CARS.

*To the President and Members, Master Car-Builders' Association :*

The Executive Committee considers it important that the Association should adopt a standard form of journal box, with bearing, wedge and lid, for 60,000-pound cars, adapted to suit the standard axle for cars of this capacity already adopted by the Association.

The committee which reported in 1890 on journal box, bearing and lid for 60,000-pound cars, and lid for old standard journal box, made a very careful report with drawings, which showed the Fletcher type of lid hinged at the top, as the Fletcher lid had previously been adopted as a standard form of lid by the Association, but nothing had been decided as to its detail measurement, nor as to its method of attachment to the journal box. The convention of 1890 ordered the drawings

changed to show the lid pivoted at one side of the box, instead of at the top, and submitted to letter-ballot vote. Upon submission of this question to a letter-ballot vote there were 548 votes cast, of which 299 were in favor of the adoption of the modified plan as standard, and 249 were opposed to its adoption, and as two-thirds of the votes cast are required for the adoption of a standard, the measure was defeated.

The Executive Committee believes that the failure to adopt the proposed standards was due to a difference of opinion in regard to the lid, and inasmuch as a lid of the Fletcher type, hinged at the top of the box, was defeated in the convention last year, and a regular Fletcher lid, hinged at one side, was defeated by letter-ballot vote since that convention, this committee recommends that the Association should rescind its former action adopting the Fletcher type of lid as a standard, and that the journal box, bearing, wedge and lid for 60,000-pound cars, as shown in cuts herewith, should be submitted for adoption as standard by letter-ballot vote, with the provision that the lid may be made either of malleable iron or pressed steel. These cuts are identical with those submitted by the committee last year, with the exception of the lid and the changes necessary at outer end of box in changing the style of lid.

With these explanations and the above recommendation, the Executive Committee leaves the matter in the hands of the Association for such action as it may think proper, and submits below the report of last year's committee.

Respectfully submitted,

JOHN KIRBY,	F. D. CASANAVE,
T. A. BISSELL,	W. H. DAY,
E. CHAMBERLAIN,	JOHN S. LENTZ,
J. N. BARR,	R. C. BLACKALL,
E. W. GRIEVES,	J. W. MARDEN,
G. W. DEMAREST,	<i>Executive Committee.</i>

"The committee respectfully submits for your consideration and adoption the designs herewith of a proposed journal box, bearing and lid for 60,000-pound cars, in which the Fletcher lid may be either of malleable iron or pressed steel, as shown. The committee finds it advisable to make a larger journal box than the present standard, and it recommends the change shown in the wedge and brass for the new journal box, because this construction gives a full bearing of the wedge upon the brass, and is less liable to deform the brass when it becomes worn thin than in the old practice of concentrating the load upon the middle of the brass. The necessary clearance for rocking motion is provided between the wedge and the top of the journal box, instead of between the wedge and the brass, and the wedge must be of such strength as will serve to distribute the load evenly over the whole length of its bearing upon the back of the brass. This enlarged journal box has the opening for the lid maintained at such dimensions as would permit the use of the same lid on the new and the old boxes by a slight modification in the opening of the present standard journal box.

"The committee therefore submits also a design showing the same lid, whether made of malleable iron or pressed steel, adapted to the present standard journal box, and recommends its adoption as standard for that box. No changes are made in this standard journal box except in the opening, which has heretofore been incomplete on



account of no means being shown for attachment of lid, and which the committee proposes to complete in such manner as will permit the use of the same lid as herein proposed for the new standard journal box for 60,000-pound cars."

JOHN S. LENTZ,  
F. D. CASANAVE,  
R. MCKENNA,  
J. N. LAUDER,  
A. A. JACKSON,  
*Committee.*

MR. BARR: I move that the report of the committee be received and the questions involved submitted to letter ballot.

The motion was carried.

MR. LENTZ: We now have recommended an oil box and lid for cars of 60,000 pounds capacity. There seems to be a desire on the part of the Association to have a lid also for cars of 40,000 pounds capacity. I have here a blue print showing a slight modification in the present Master Car-Builders' box which, if adopted, will take the same lid which is now used upon the 60,000-pound box and which has just been submitted to letter ballot.

MR. GRIEVES: I would move that the form of lid shown on the blue print for  $3\frac{3}{4}$  by 7 journal box be submitted to letter ballot for adoption by the Association.

Seconded and carried.

MR. CLOUD: I have a communication from the Secretary of the Southern and Southwestern Railway Club. Will you hear it?

The communication was ordered to be read, as follows:

CAPE MAY, N. J., June 11, 1891.

*J. W. Cloud, Esq., Secretary Master Car-Builders' Association:*

DEAR SIR,—At a meeting of the Southern and Southwestern Railway Club, held in Louisville on May 21, 1891, Mr. Pulaski Leeds, Superintendent Machinery of the Louisville & Nashville Railroad, introduced a resolution to the effect that the club "recommend to the Master Car-Builders' Association the appointment of a committee of five or seven mechanical experts to whom would be assigned the business of presenting a complete set of drawings for each of the various classes of freight cars in this country, such as box, flat, gondola and others; and that the designs so presented to the Association for action be criticised and revised if necessary, and finally adopted as standards to which all new cars must be built after they go into effect."

This motion was carried and in accordance therewith it is requested that you bring the matter to the attention of the Association for its consideration. The idea of the Southern and Southwestern Railway Club and of the gentleman who introduced the motion is that the experts employed on this work should give their whole

time to it and be regularly employed by the Association ; that the designs produced by them should embody the best practice of the country, and that the standards thus obtained should do away with many of the present difficulties attending the repairs of freight cars on foreign roads by making them all alike.

It is believed that many of the variations in car construction are needless, and while the methods by which complete standards for each class of car may be obtained may need alteration by the Association, the club believes it is very important that the advisability of obtaining such standards should be carefully considered.

Yours respectfully, W. H. MARSHALL,  
Secretary.

MR. BARR: I move that the communication be received and referred to the Executive Committee.

The motion was carried.

THE PRESIDENT: Is there any other business to bring before the meeting at this time? If not we will proceed to the election of officers.

MR. CLOUD: The Secretary has received no further nominations than those received from the nominating committee which were announced when handed in. The nominations are as follows:

For President, John Kirby ; First Vice-President, E. W. Grieves ; Second Vice-President, John S. Lentz ; Third Vice-President, T. A. Bissell ; Executive Committee members—R. C. Blackall, E. Chamberlain, F. B. Casanave ; Treasurer, G. W. Demarest.

MR. LEEDS: I move that the Secretary be instructed to cast the vote for the Association for the gentlemen named.

The motion was carried and the Secretary announced the election of the nominees.

THE PRESIDENT: I would call for the report of the Committee on Correspondence and Resolutions.

MR. DAY: I have a resolution here to offer of thanks to the *Northwestern Railroader*:

Inasmuch as the managers of the *Northwestern Railroader* have been very active in their courtesies toward the Master Car-Builders' Association in giving us accurate reports of the proceedings of the convention, and in many other ways seeking to advance the interests of the Association ; therefore be it

*Resolved*, That the thanks of this body are most sincerely extended to this paper for its kindness.

I offer that as a resolution.

MR. WAITT: I move the adoption of the resolution as read.

The motion was carried.

MR. CLOUD: The President names a committee, consisting of J. W. Marden and J. T. Chamberlain, to prepare an obituary of Mr. D. C. Richardson, for incorporation in the proceedings; and another committee, consisting of C. A. Smith and Joseph Townsend, to prepare an obituary of Mr. B. K. Verbryck.

The committee which was appointed to report on subjects for next year, has not been able to give the matter sufficient consideration to make a report. This matter has usually been finally arranged by the Executive Committee, and it is the desire now of this committee that has not yet reported, and also of the Executive Committee, that the members should name any subjects which they think ought to be incorporated in the subjects for next year, at this time, or they can either communicate with the Committee on Subjects or the Secretary, so that it may be considered when the subjects are fixed by the Executive Committee.

MR. DAY: I think it would be a very good idea to have an expression of feeling from the members of the convention as to where they would like to hold the convention next year. I think it would be very well to do that, in order that the committee may have a guide to go by.

THE PRESIDENT: We will take that up, Mr. Day.

MR. CLOUD: We have three or four letters here from different hotels, addressed to various members of the Association, offering accommodations for next year.

The Secretary read letters from Cleveland, Ohio; the Crossman House, Alexandria Bay; the United States Hotel at Saratoga Springs; Lakewood, New York, and the Sea View House at Cottage City, Martha's Vineyard.

THE PRESIDENT: If there is no further business before this meeting —

MR. MACKENZIE: I believe there is a motion before the house that the members should give an expression of their preference for the place of the next meeting.

THE PRESIDENT: Well, if you have got anything to say, we will be very glad to hear it, Mr. Mackenzie.

MR. BISSELL: We have examined the coast all along in these southern latitudes, and I think it would be well to go up in Mr. Adams' neighborhood and give New England a warming up. He promised to make it warm for us, or pleasant for us, if we went there.

MR. ADAMS: It is a long time since we met in Boston. I think I can say pretty safely that if you go to Boston you will be handsomely received and cared for. I do not know of any hotel that would be large enough to accommodate twelve or fifteen hundred people, but there are lots of hotels there not far apart.

MR. LAUDER: I would like to say just one word to the Association in regard to the communication just read from the hotel keepers of Cottage City on Martha's Vineyard. Personally, I do not want you to go there, and I know Mr. Adams does not, because it means an immense amount of work for us. But if the convention will decide to go to Cottage City at their next meeting, we will guarantee—I think Mr. Adams and I will guarantee—that you will be well taken care of. Cottage City is on Martha's Vineyard. It has good hotel accommodations, although there is no one house that is big enough to accommodate the members of the Association. I have seen the proprietors, and have been assured that every person attending the meeting of the Association will have the benefit of the regular rate agreed upon by the committee, so there would be no chance for any gouge game, and it is easy of access by the steamboat line and by the road with which I am connected. If you think of going to the extreme East, I would recommend that you go to Cottage City by all means. In fact, I would recommend it in preference to Boston, because I think you can go there and be better accommodated and have a better time socially than you could in Boston. You are near enough to Boston so that you can slip in and have nearly all day there and get back at night.

MR. MACKENZIE: I would suggest that the members in favor of Cottage City rise to their feet.

MR. ADAMS: One word more, Mr. President. I do not want to vote on that Cottage City business quite yet. I am not so much in favor of Cottage City as Mr. Lauder. It is a good place, I am willing to concede. But there is no place where we have had such good accommodations, and enjoyed ourselves better, than at Saratoga. It is the finest place to go to for hotel accommodations. We have got some fine people up there, too. Mr. Blackall's road runs right through Saratoga, and he entertained us most magnificently when we were there last. Saratoga is undoubtedly the best place that we could go to that we could name. There is no question about it. While I would be very glad to have the meeting take place further

east in New England, I would vote for Saratoga any time and every time.

MR. DAY: I would favor Saratoga, and move that that be made the permanent place of meeting in the future.

MR. MACKENZIE: I withdraw my motion, Mr. Chairman.

MR. CASANAVE: I move that we adjourn.

MR. DAY: I move that we meet at Saratoga, so as to get it before the house.

MR. BARR: There is a motion to adjourn.

The motion to adjourn was put and carried.

## REPORT OF ARBITRATION COMMITTEE

ON

### CASES ARBITRATED SINCE THE LAST CONVENTION, AND PROPOSED AMENDMENTS TO THE RULES OF INTERCHANGE.

The Arbitration Committee submits herewith to the Association its report for the year, giving in detail the cases arbitrated, all of which have been published and duly sent to all the members.

The committee gave written notice to various railway clubs to propose to them such revision as they may consider desirable to the rules of interchange, at the convention in June, and it also notified all members of the Association to forward, prior to May 1, 1891, such suggestions for revision as each might think proper, for the consideration of the committee. The reports of the different railway clubs and of some of the members were received, and at a meeting of the Arbitration Committee held in New York, May 8, 1891, all such communications were considered by the committee in full session, and the committee would report as follows:

#### RULE No. 3.

SECTION (a). The New York Railroad Club recommends that Section (a) of Rule No. 3 should read "diameter," instead of "length," in the next to the last line, and the New England Railroad Club recommends that it should read "length or diameter," instead of "length." The Arbitration Committee, however, recommends that the words "circular," "round" and "in length" in this section of Rule No. 3 be omitted, so as to make this section read as follows:

(a) Shelled out; wheels with defective treads on account of pieces shelling out, leaving flat spots deepest at the edge, with a raised center. Wheels must not be condemned from this cause, unless the spots are over  $2\frac{1}{2}$  inches, or are so numerous as to endanger the safety of the wheel.

SEC. (b). The New York Railroad Club and the Central Railway Club both recommend allowing longer seams than this section now permits, but this committee does not concur in the proposed changes, as it does not consider such change consistent with safety.

SEC. (c). The New York Railroad Club and the Central Railway Club both recommend that this section read "worn tread," instead of "worn through chill," and that " $2\frac{1}{2}$  inches" should be changed to "4 inches." The committee does not concur in these recommendations, as it does not believe it advisable to make any change whatever in this section; first, because the term "worn through chill" is a better one to distinguish it from the defect mentioned in Section (e) than "worn tread" would be; and the committee also believes the tread will not wear to a longer flat spot unless it be worn through the chill, and that if these changes were made, there would be reason for claiming that flat spots caused by sliding were due to ordinary wear, when such is not the case.

SEC. (d). The New York Railroad Club and the Central Railway Club both recommend that this section be altered to read "one inch thick or less," instead of "less than one inch thick." The committee concurs in this amendment, because it would make the use of the Master Car-BUILDER's defect gauge more definite, and

would result in the rejection of a wheel if the gauge goes over the flange, whereas, under the rule as now worded, the gauge may go over the flange, and yet the wheel may not be rejected because it is an exact fit. This section, if modified as proposed herein, would read :

(d). Worn flange; flanges one inch thick or less, or having flat, vertical surfaces extending more than one inch from tread.

SEC. (f). The Central Railway Club recommends the omission of the last sentence of this section, which this committee does not concur in, as it believes that it is very important to distinguish flat sliding from flat spots caused by ordinary wear, and occurring when the wheel becomes worn through chill.

SEC. (s). The New York Railroad Club and the Central Railway Club both recommend that Paragraph 11 of Section (s) be changed, by adding to it the following : " Brake shoes worn to  $\frac{3}{8}$  inch at center shall be considered as worn out, and may be replaced with new shoes at the expense of the company owning the car." The committee believes that the provision for a minimum thickness of brake shoes would be a good one, but it recommends that instead of adding the provision to Paragraph 11, that a new paragraph, No. 12, be inserted, and the succeeding paragraph numbered one higher; the new paragraph, No. 12, to read as follows :

" 12. Brake shoes  $\frac{3}{8}$  inch thick or more at center."

The committee does not concur in the recommendations made by the clubs as to using this place for the charges for such renewals of brake shoes, as it would be out of its proper place in this section.

The committee appointed to report upon the subject of air-brake standards and rules for the care of air brakes, recommends to the convention, and has recommended to the Arbitration Committee, that certain modifications of Rule No. 3 should be made in regard to air brakes, in which the committee concurs, and it recommends to the Association to add new paragraphs to Section (s), prescribing the condition in which cars equipped with air brakes must be, so as not to be considered in bad order.

Such additional paragraphs should be numbered subsequent to those already in Section (s), the first of which would therefore be No. 17, if the new paragraph, No. 12, as proposed, is inserted, and would read as follows :

17. " If the car has air brakes, the cylinder must have been cleaned and the triple valve cleaned and oiled within six months, and the date of the last cleaning and oiling marked on the brake cylinder."

18. " If the car has air brakes, the cylinder must have been oiled within three months, and the date of the last oiling be marked on the cylinder."

19. " If the car has air brakes, the brake-shoe slack must be so adjusted that under the full application of the brakes, the piston travels not less than four inches nor more than eight inches."

20. " If the car has air brakes, the brakes must apply and release promptly with proper handling by the engineer's valve."

21. " Triple valves and auxiliary reservoirs must be free from water."

22. " Air pipes and all connections thereto must be free from leaks, and the pipes properly secured to the car body so that injury shall not occur to the apparatus nor leaks be produced by shaking and vibration of the pipe."

23. "Air-brake hose when not coupled with another car must be properly secured in the dummy coupling."

SEC. (u). The New York Railroad Club and the Central Railway Club recommend changes in this section which would permit Master Car-Builders' drawbars to pass inspection with certain small defects which would not interfere with the service of such drawbars, such as chipped edges, etc. The committee does not concur in detail with the recommendations as made by either of the Railway Clubs, but would recommend that a new paragraph, No. 1, be added to Section (u) to read as follows:

"Master Car-Builders' drawbars with such minor defects only as do not impair their efficiency and safety."

The other paragraphs of this section to be numbered one higher.

The New York Railroad Club also recommends the addition of another paragraph to Section (u), of Rule No. 3, to read as follows:

"In the absence of any stencil on cars equipped with cast-iron drawbars to show what is the proper standard, any drawbar of length or dimension shall be accepted."

The committee does not concur in this recommendation, as it considers it opposed to the spirit of the rules, inasmuch as the substitution of foreign parts for the standard is not contemplated by the rules.

The Central Railway Club and the Western Railway Club both recommend a modification of Paragraph No. 7 of Section (u). The Central Railway Club recommends to add "that cars will be received with one draft timber bolt broken in each timber providing there are three bolts in each through middle sill, except when back bolt is broken," and the Western Railway Club recommends the insertion after the word "effective" the words "draw timbers must be sound and free from cracks or splits which extend from the end to bolt hole or from one bolt hole to another." The committee does not concur in either of the above recommendations, and it considers that Paragraph No. 7 of Section (u) should be left as it now reads.

SEC. (y). The Central Railway Club recommends that this section should be made to read, "Cars with doors missing or broken so as to render the contents of car liable to damage from sparks or storm; or with door shoes worn or loose so as to allow the doors to swing outwardly." The Western Railway Club recommends adding after the word "missing" the words "or broken, so as to render the contents of car liable to damage from sparks or storms." The committee concurs in the spirit of these recommendations, but would propose a slightly different wording from that above, so as to make Section (y) read as follows:

SEC. (y). "Cars with doors missing; or in condition which will improperly protect the lading, or with door shoes worn or loose so as to allow the door to swing outwardly."

The Central Railway Club further recommends additions to Section (y) which the committee concurs in, but in order to carry them into effect it would require that Section (y) as above mentioned should be numbered (y-1) and that additional paragraphs should be numbered and read as follows:



SEC. (y-2). "Cars with four-hole center plates and long center pins through bolster, must have two effective bolts diagonally opposite."

SEC. (y-3). "Cars with four-hole center plates and short center pins which rest in upper plate must have three effective bolts."

SEC. (y-4). "Cars with two-hole center plates must have two bolts effective."

SEC. (y-5). "Four-hole center plates must not have two adjacent corners of plates broken through bolt holes."

SEC. (y-6). "Two-hole center plates must be unbroken."

#### RULE No. 4.

The New York Railroad Club and the Central Railway Club recommend change in Rule No. 4 by substituting the following :

"A car with defects which do not render it unsafe to run, or unsafe to trainmen, must be accepted, but in such cases the company to which such car is offered may require that a defect card shall be securely attached to the car with four tacks, preferably on the outside face of intermediate sill between the tie-timbers; but no defect card shall be required for old defects on foreign cars by the receiving road. Companies shall only be required to card their own cars for old defects." These recommendations are concurred in by the committee in so far as the location and securing of the card are concerned, but are not concurred in by the committee in so far as the provisions for carding old defects are concerned, as it believes it would be entirely contrary to the general tenor of the rules. The rules give each road an opportunity to protect itself against liability by requiring defect cards for any existing defects. The insertion of the proposed amendment would operate to annul this provision of the rules, and would cause delay at interchange points on account of disputes as to whether defects were old or not, and would operate against the interests of railroads finally returning cars to the owners.

Rule No. 4, as the committee would propose to revise it, would read as follows :

"A car with defects which do not render it unsafe to run or unsafe to trainmen must be accepted, but in such cases the company to which the car is offered may require that a defect card shall be securely attached to the car with four tacks, preferably on the outside face of the intermediate sill between the cross tie-timbers."

#### RULE No. 5.

The Western Railway Club recommends to add after the word "specify," in the fifth line, the words "without abbreviations." The committee concurs in this general idea, but it would suggest that the words "in full" be used after the word "specify" instead of the words "without abbreviations," so that the last sentence would then read, "The card must plainly specify in full each item for which charges are authorized."

The New York Railroad Club, the Central Railway Club and the New England Railway Club all recommend that the card should be filled out with ink only, but the committee does not concur in this recommendation, as it believes it will be impracticable to require it.

## RULE No. 6.

The Western Railway Club and the Central Railway Club both make recommendations so as to permit a portion of the repairs needed on a car to be made without all being made, and that bills may be rendered for the repairs which have been made, while the car still carries carded evidence of further repairs needed. The committee concurs in this general idea, but in lieu of the various recommendations made by the clubs, it would propose to add to Rule No. 6 a paragraph as follows:

"Separate cards shall be used for shop repairs and for running repairs." This is practically that proposed by the Central Railway Club.

## RULE No. 7.

The New England Railway Club, the New York Railroad Club and the Central Railway Club all recommend that the last four words of Rule No. 7 be omitted, but this committee does not concur in this recommendation.

## RULE No. 9.

The Central Railway Club makes various recommendations as to Rule No. 9, especially the addition of a lot of defects on cars which shall be classed as ordinary wear and tear and received by the owners. These recommendations cover various items of defects to both car bodies and trucks, but inasmuch as Rule No. 9 is especially devoted to wheels and axles, the committee does not concur in the recommendations to insert these provisions under it. The committee, however, believes that this Rule needs some slight verbal modifications in order to make it clearer and more consistent in its various sections, and recommends that it be re-written as follows, which includes the recommendation of the Western Railway Club in regard to the marking of axles applied:

"When wheels or axles are renewed, they shall be treated as follows:

## WHEELS.

"When wheels are renewed they shall be charged to the company owning the car, if the cause of removal is:

- (a) Shelled-out spots.
- (b) Seams.
- (c) Worn through chill.
- (d) Worn flange.
- (e) Tread worn hollow.
- (f) Burst.
- (g) Broken flange, if the breakage is caused by seams worn through chill or worn flange.
- (h) Broken rim, if caused by rim being hollow.
- (i) Cracked tread, if caused by being worn through chill.
- (j) Cracked plate.
- (k) Cracked brackets.
- (l) Broke in pieces.
- (m) Loose.
- (n) Out of gauge.

"When wheels are renewed, they shall not be charged to the company owning the car if the cause of removal is:

- (a) Flat sliding.
- (b) Chipped flange.
- (c) Broken flange, if the breakage is not caused by seams, worn through chill or worn flange.
- (d) Broken or chipped rim, not caused by being hollow.
- (e) Breakage of any kind caused by derailment.

#### AXLES.

"When axles are renewed, they shall be charged to the company owning the car if the cause of removal is

- (a) Wheels having defects which are chargeable to the owners.
- (b) Axles bent or broken, or with collars worn off under fair usage.
- (c) Axles less than the prescribed limits.

"When axles are renewed they shall not be charged to the company owning the car if the cause of removal is

- (a) Wheels having defects for which the owner is not chargeable.
- (b) Axles damaged by derailment or wreck.
- (c) Cut journals.

"When axles are renewed, the axles applied shall be stamped or prick-punched near the center with the initials of the road doing the work and the date of renewal."

#### RULE NO. 10.

Various recommendations were made by the several clubs in regard to Rule No. 10, all of which the committee has carefully considered, but it concurs in only a small portion of these recommendations, namely, the addition of the words "materials and workmanship" after the word "design" in the seventh line, and the omission of the last paragraph, as recommended by the Central Railway Club. There are some other changes which this committee would like to recommend in Rule No. 10, for reasons which will be evident, and it would add in regard to the omission of the last paragraph that this course is recommended because it is considered that the use of the 10 per cent provision has been very much abused and that 10 per cent has been charged in cases where it is not justified under this rule, and further, inasmuch as it is equitable for individuals and companies to charge railway companies 10 per cent wherever 10 per cent is charged in rendering bills the other way, the committee believes that there is no ultimate advantage in having the 10 per cent provision at all.

Rule No. 10 would read as follows:

"In the case of cars belonging to private parties or corporations other than railway companies, or that are not cared for or controlled by railway companies, the repairs or renewals of such parts as fail under fair usage, or on account of ordinary wear and tear, or bad or inferior design, material or workmanship, may be made by railway companies and charged to owners at the rates prescribed by the rules of interchange. In such cases railroad companies shall not be liable for the replacement of worn-out brake shoes, journal bearings, journal boxes, center plates or bolts, broken

truck timbers or truck or draft springs, unless the failure occurs when the car is wrecked."

#### RULE NO. 11.

The committee would recommend that Rule No. 11 be modified by adding after the word "owner" in the eighth line, the following: "If the route coincides with that over which the car passed to the point where it became unserviceable no liability shall be incurred as between the owner and the road handling the car, either for freight charges in handling the car or for car service during this movement."

#### RULE NO. 17.

The Western Railway Club recommends the insertion in the fourth paragraph of Rule No. 17, between the words "with" and "date," the words "the initials of the road applying them, the." The committee thinks this is a good recommendation, but it would propose a slightly different wording so that the paragraph would read as follows: "Wheels applied must be marked on the inside with the date, the initials of the road doing the work and the place where the work is done."

#### RULE NO. 18.

The New York Railroad Club and the Central Railway Club both recommend that Rule No. 18 be amended so as to allow certain splicing of sills which is not now permitted, but the committee does not concur in this recommendation.

#### RULE NO. 20.

The New England Railroad Club recommends that Rule No. 20 be revised to require that a defect card shall state the wrong material used, in which the committee concurs, so that the last clause of Rule No. 20 would read, "each defect card shall state the wrong material used, and shall pass the car back to the owning road."

#### RULE NO. 21.

The Central Railway Club and the Western Railway Club recommend that a penalty of 25 cents per day be required for all time in excess of 30 days before report is made to the owner; they also recommend that the same penalty be required for delay beyond 60 days in Rule No. 22. The committee concurs in the spirit of these recommendations, and would recommend that Rule No. 21 have a new sentence added at the end, to read as follows: "In case of failure to make such reports within 30 days, a penalty of 25 cents per day may be charged by the road owning the car for each day in excess of 30 days before such notice is given."

#### RULE NO. 22.

In accordance with the recommendations mentioned above and the concurrence of the committee therein, Rule No. 22 would be modified by adding at the end of the rule as it now stands, the following: "In case of failure to complete the rebuilding of the car within 60 days from the time that notice of the age and value of the car destroyed has been received from the owner of the car, a penalty of 25 cents per day may be charged by the owner for each day in excess of the 60 days after such notice has been given."

#### RULE NO. 25.

The New England Railroad Club recommends that the words "when possible" in this rule be placed at the end instead of in the second line from the last. The

committee concurs in this change, so that the last sentence of this rule would read, "Requisitions for such material shall state that it is for repairs of cars, and shall give the number and lettering of such cars and pattern number of castings required when possible."

#### RULE NO. 26.

The New England Railroad Club recommends that the next to the last paragraph of this rule be revised by adding at the end of this paragraph the words "including freight." The committee does not concur in this recommendation, but would recommend that the words, "without freight charges," be added to this paragraph, so that it would read, "manufactured articles not included in the above list, at the current market prices, without freight charges."

The committee takes this view of the case, because it considers that it is desirable to have a fixed figure for such manufactured articles rather than a variable figure, which would open the matter to disputes over freight charges added by the different roads.

The Western Railway Club recommends the addition of a detail list of hours of labor to be allowed for different jobs of work on cars, such as renewing one or more draft or intermediate sills or end sills, or for draft timbers or end posts, drawbars, etc., etc. The committee does not concur in this recommendation, as it does not believe it possible to fix the hours of labor properly chargeable for such repairs of cars in interchange.

#### RULE NO. 29.

The Western Railway Club recommends that Rule No. 29 be changed to read as follows: "Any railroad company that does a general traffic business may become a party to the code of rules by giving notice through one of its general officers to the Secretary of the Master Car-Builders' Association, providing the application is approved by the Executive Committee."

The committee does not concur in this recommendation, as it does not believe that the provision is sufficiently definite to justify such a distinction in the rules of interchange, and it does not think that the Executive Committee could properly determine what constitutes a general traffic business in the sense of this provision.

F. D. CASANAVE,  
G. W. RHODES,  
M. M. MARTIN,  
J. W. MARDEN,  
JOHN MACKENZIE,  
*Arbitration Committee.*

#### MINUTES OF MEETING HELD IN CHICAGO, OCTOBER 6, 1890.

Members present—Messrs. F. D. Casanave, *Chairman*; M. M. Martin and John Mackenzie.

*Messrs. G. W. Rhodes and J. W. Marden, who could not attend the meeting, subsequently concurred in the following decisions:*

*Resolved, First,* That no hypothetical cases be considered;

*Second,* That all cases considered shall be decided under the rules in force at the date of the card.

## ARBITRATION CASE NO. 47, 1890.

HANNIBAL &amp; ST. JOSEPH RAILROAD CO.

*versus*

INDIANA, ILLINOIS &amp; IOWA RAILROAD CO.

## BROKEN PARTS ENUMERATED ON A HOME CARD.

The Hannibal & St. Joseph Railroad Co. renders a bill against the Indiana, Illinois & Iowa Railroad Co. for repairs to parts of Hannibal & St. Joseph car No. 3044 which, it is claimed, were damaged while the car was in the possession of the Indiana, Illinois & Iowa Railroad Co.

The latter road placed upon the car a home card dated October 21, 1889, to enable it to reach the owners in the condition named. The road returning the car refuses to pay the bill on the ground that the car was in general worn-out condition, and claims, therefore, that it is not responsible for any damage. Both parties agree to refer the case to the Arbitration Committee for decision.

## DECISION.

Under the rules in force in 1889, which govern this case, the Indiana, Illinois & Iowa Railroad Co. was bound by Rule 11 to report the condition of the car to the owner before carding it home.

It does not appear from the correspondence that the provisions of this rule were complied with.

Inasmuch as there was no defect card on this car, the Indiana, Illinois & Iowa Railroad Co. is responsible to the owners for any broken parts upon it when sent home.

The committee, therefore, is of the opinion that the Hannibal & St. Joseph Railroad Co., owners of the car, are justified in rendering bill for such parts as were actually broken and enumerated on the home card, and signed by the master mechanic of the Indiana, Illinois & Iowa Railroad Co.

*Mr. Rhodes being interested in this case, was not a party to this decision.*

## ARBITRATION CASE NO. 48, 1890.

DÉTROIT, GRAND HAVEN &amp; MILWAUKEE RAILWAY CO.

*versus*

PITTSBURGH &amp; WESTERN RAILWAY CO.

## LOST DOOR CARDED, BILL FOR.

The Detroit, Grand Haven & Milwaukee Railway Co. renders a bill against the Pittsburgh & Western Railway Co. for the cost of replacing one side door lost from P. & D. T. car No. 4003, defect card for which was attached to the car by the Pittsburgh & Western Railway Co. January 25, 1890.

The latter road refuses to acknowledge the responsibility on the ground that it was not necessary to replace the door for the safe running of the car.

The Detroit, Grand Haven & Milwaukee Railway Co. replied that it did not consider the car safe from fire or in a condition to carry freight without the door, and

that the replacement of the door was necessary, and that the bill rendered was, in accordance with the rules.

Both parties agree to refer the case to the Arbitration Committee for decision.

DECISION.

In the opinion of the committee, a side door is a necessary part, which, if missing, unfits the car for the purpose for which it is intended.

By replacing it, therefore, it cannot be considered that the Detroit, Grand Haven & Milwaukee Railway Co. violated Rule No. 6, as claimed by the Pittsburgh & Western Railway Co., and therefore the committee believes that the bill rendered is just and proper.

ARBITRATION CASE No. 49, 1890.

KEOKUK & WESTERN RAILROAD CO.

*versus*

CENTRAL RAILROAD & BANKING CO., OF GEORGIA.

WRONG MATERIAL USED IN REPAIRS OF TRUCKS.

The Central Railroad & Banking Co., of Georgia, destroyed a Keokuk & Western car and returned the trucks, after having made certain repairs. The owner claims that the repairs were improperly made, the workmanship being bad and some of the material being foreign to the trucks, and wheels nearly worn out. The Keokuk & Western Railroad Co. renders bill for replacement of foreign parts and wheels, which is objected to by the Central Railroad & Banking Co., of Georgia, claiming that the repairs were properly made, and that some of the parts said to be foreign were on the truck at the time of the destruction of the car, for which that road does not consider itself responsible.

Both parties agree to refer the case to the Arbitration Committee for decision.

DECISION.

Under Rule No. 22, a company on whose line a car is destroyed must, in rebuilding or repairing it, use material in conformity with the original kind used, and of the same design. Under Rule No. 19, any company repairing foreign cars with wrong material, and not in compliance with Rules Nos. 15, 16, 17 and 18, shall be liable for the cost of changing such car to the original standard. The Keokuk & Western Railroad Co. asked the Central Railroad & Banking Co. of Georgia to send a man to have an examination made of the trucks to satisfy itself that the claim was just. It thought best not to join in an examination. Under the rules named, the Keokuk & Western Railroad Co. is justified in making charges necessary to restore the truck to its original standard. The claim that foreign parts were in the trucks at the time the car was destroyed is not a good defence. If a road inspecting a car does not avail itself of the privileges granted by the rules through careful inspection, it assumes the responsibility for the damage or wrong parts.

In the opinion of the committee, therefore, a bill rendered for the renewal of the wrong parts and for the cost of correcting bad workmanship is just, and in conformity with the rules.

The committee, however, cannot sustain the claim made for wheels for the reason that, while they were not the same as originally used in the trucks, those

returned were not worn out. They were in fact second-hand wheels. The Keokuk & Western Railroad Co. says that they would be satisfied if the wheels were as good as those originally placed in the trucks. It is, however, impossible for that road to tell whether the original wheels could have been in a better condition than those returned after having been in service on other lines up to the time of the destruction of the car. If at the time of the destruction of the car, the wheels in the trucks had been worn out and renewed by the Central Railroad & Banking Co. of Georgia, a bill for their replacement would have been a proper charge against the Keokuk & Western Railroad Co.

The committee, therefore, is of the opinion that the bill against the Central Railroad & Banking Co. of Georgia in this case cannot contain any proper charge for wheels.

### ARBITRATION CASE No. 50, 1890.

OHIO & MISSISSIPPI RAILWAY CO.

*versus*

PEORIA, DECATUR & EVANSVILLE RAILWAY CO.

#### CREDIT FOR WRONG DRAWBAR REPLACED.

The Ohio & Mississippi Railway Co. made a bill against the Peoria, Decatur & Evansville Railway Co. for repairs to Ohio & Mississippi car No. 7,167 on Peoria, Decatur & Evansville card, for one wrong drawbar, March 7, 1890.

The Peoria, Decatur & Evansville Railway Co. objects to credit given for wrong drawbar removed, which is  $\frac{3}{4}$  cent per pound as per Rule No. 25 of 1889, claiming that it should be credited with full value of the cast iron in drawbar at 2 cents per pound.

The Ohio & Mississippi Railway Co. claims that it has credited according to the rules. The dispute is referred to the Arbitration Committee by the Ohio & Mississippi Railway Co. in which the Peoria, Decatur & Evansville Railway Co. does not join, as it does not consider the matter of sufficient importance.

In accordance with Rule No. 29, the Arbitration Committee is obliged to give its decision on the evidence furnished.

#### DECISION.

In accordance with Rule No. 18, any company repairing foreign cars with wrong material is liable for the replacement of such parts to the original standard. The Ohio & Mississippi Railway Co., acting in accordance with the provisions of this rule, charges the Peoria, Decatur & Evansville Railway Co. with the cost of a new drawbar and credits the material removed at the rate fixed in Rule No. 25. If the Peoria, Decatur & Evansville Railway Co. wished to be put to no loss on account of replacement of drawbar, it could, under Rule No. 24, have made a requisition upon the Ohio & Mississippi Railway Co. for its standard drawbar. Failing to do so, it cannot properly object to the credit given for the wrong drawbar, although it was worth more to the company that applied it.

In the opinion of the committee the credit allowed by the Ohio & Mississippi Railway Co. is in accordance with the rules. The defect card, however, calls only



for one wrong drawbar, while the bill rendered contains charges for wrought iron and bolts, and if the use of these materials was not necessary to restore the car to its original standard, the charges for wrought iron are improper.

### ARBITRATION CASE No. 51, 1890.

CHICAGO, BURLINGTON & NORTHERN RAILROAD CO.

*versus*

THE DES MOINES UNION RAILWAY CO.

CAR BURNED ON SIDING CLAIMED TO BE A PRIVATE TRACK.

On January 4, 1890, Chicago, Burlington & Northern car No. 483 was damaged by fire on a siding of the Des Moines Union Railway Co. leading to a cooper shop at Des Moines, Iowa.

The car was delivered to the Des Moines Union Railway Co. by the Chicago, Burlington & Quincy Railroad Co. and the Des Moines Union Railway Co. claims that the Chicago, Burlington & Quincy Railroad Co. should assume the settlement with the Chicago, Burlington & Northern Railroad Co. under Rule No. 27 of 1889. After further correspondence, which shows that the track on which the car stood when damaged was not a private siding, but that it is a siding belonging to the Des Moines Union Railway Co., the latter Company and the Chicago, Burlington & Northern Railroad Co. both agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

The Arbitration Committee is of the opinion that as the car in question did not stand upon a private siding in the sense of Rule No. 27 of 1889 when damaged by fire, the Des Moines Union Railway Co., in whose custody the car was at the time of damage, should make settlement with the owners of the car.

*Mr. Rhodes being interested in this case, was not a party to this decision.*

### ARBITRATION CASE No. 52, 1890.

HANNIBAL & ST. JOSEPH RAILROAD CO.

*versus*

MISSOURI PACIFIC RAILWAY CO.

AIR-BRAKE RETAINING VALVE LOST.

The Hannibal & St. Joseph Railroad Co. alleges that it received from the Missouri Pacific Railway Co. August 17, 1889, at St. Joseph, C. C. C. car No. 406, with retaining valve missing.

From correspondence submitted it appears that the car in question was taken to Quincy by the Hannibal & St. Joseph Railroad Co. to be delivered to the Chicago, Burlington & Quincy Railroad Co. who refused it on account of the missing retaining valve unless carded by the Hannibal & St. Joseph Railroad Co. The card was furnished by the latter road and claim made upon the Missouri Pacific Railway Co. for authority to bill against that road for the missing part, because the records of the Hannibal & St. Joseph Railroad Co. show that the part named was missing when the

car was delivered by the Missouri Pacific Railway Co. Authority is refused, with the explanation that the Missouri Pacific Railway Co. is governed strictly by the Master Car-Builders' Rules in carding cars.

The correspondence submitted by the Hannibal & St. Joseph Railroad Co. charges that the Missouri Pacific Railway Co. refused to furnish defect card because it did not consider itself bound under the rules to card for any damaged air-brake material. This charge, however, is neither admitted nor denied by the Missouri Pacific Railway Co., which simply states that in carding cars it strictly conforms to the Master Car-Builders' Rules.

Both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

A car with defects which do not render it unsafe to run nor to trainmen, must be accepted, but in such cases the accepting company may require a defect card from the company delivering it. (See Rule No. 4.) It appears from the correspondence submitted that the Hannibal & St. Joseph Railroad Co. accepted the car without availing itself of the privilege extended by the rule cited. Having accepted the car in a faulty condition, as in this case, the committee is of the opinion that it became responsible for the missing retaining valve, and that the claim made upon the Missouri Pacific Railway Co. is not consistent with the Master Car-Builders' Rules.

NOTE.—It may be proper to state for the information of subscribers to the Master Car-Builders' Rules, that if it had been clearly shown to the committee that the Missouri Pacific Railway Co. had refused to furnish defect card because under the rules it did not consider itself responsible for damage to parts of the air-brake apparatus, that the committee would decide against that road, as under Rule No. 2, a railroad company is bound to deliver cars in good running order, and is therefore responsible for any damage which the air-brake apparatus may have sustained while the car was in service on its lines, as well as damage to other parts of the car.

*Mr. Rhodes being interested in this case, was not a party to this decision.*

#### ARBITRATION CASE NO. 53, 1890.

CHICAGO, ROCK ISLAND & PACIFIC RAILWAY CO.

*versus*

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS RAILWAY CO.

#### PRICES FOR FURNITURE CARS DESTROYED.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co. destroyed two Chicago, Rock Island & Pacific box cars; in rendering bill for the same the owner proposes to charge an amount in excess of the rates named as the settlement prices by the rules of interchange, claiming that the cars were of special design and intended to carry furniture, and that their original cost was, in consequence, greater than that of the ordinary box cars, the settlement for which should therefore be made under that clause of Rule No. 23 referring specially to methods of settlement for refrigerator cars, and other freight cars designed for special purposes.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co. does not agree to the proposition, and regards these strictly as box cars, differing from others

only in dimensions, and not as freight cars designed for special purposes in the sense of the rules.

Both parties agree to refer the matter to the Arbitration Committee for decision.

#### DECISION.

The paragraph in Rule No. 23 relative to settlement for freight cars designed for special purposes is incomplete. It fails to clearly specify the purposes for which cars shall be used in order to be considered as designed for special purposes; neither does it establish a limit either in cost or dimensions. It is, however, evident that the framers of the rules intended, when fixing settlement prices, that one price should apply to cars of different dimensions and cost to some extent. For instance, the settlement price for a box car 32 feet long, and over, is fixed at \$275.00. It is well known that box cars of greater length and size are built to carry a greater bulk of grain or other merchandise at a cost exceeding that of a box car of the minimum dimensions given for this rate, yet if destroyed, the owner cannot expect in settlement a greater amount than is fixed for the smaller car. It is also reasonable to presume that in excepting some kinds of cars from the operation of the prices, those so excepted were understood to embody special features calculated to fit them to carry a class of freight for which ordinary cars are not suited, and which are not required in ordinary freight cars. Refrigerator cars contain features, such as ice boxes and racks, and are specially constructed in order to secure proper insulation, and thus fit them for a purpose for which ordinary box cars cannot be used. Special cars, intended for the transportation of horses or other valuable stock, contain special features and variations in design not found in ordinary stock cars.

The committee believes that only cars possessing some of these special features can be considered as having been designed for special purposes. A car may have been designed with a view to adapt it to carry furniture, but it is available for other freight and is not confined to a special purpose in the sense of a refrigerator car. It is enlarged more with a view to increase its bulk carrying capacity than to strictly serve a purpose for which no other car would answer.

For the reasons stated, the committee believes that under a fair interpretation of the rules as laid down, no variation from the figures named in the rules would be justifiable.

#### ARBITRATION CASE No. 54, 1890.

SIoux CITY & PACIFIC RAILROAD CO.

*versus*

CHICAGO, BURLINGTON & QUINCY RAILROAD CO.

#### HINGES ON REFRIGERATOR CAR ICE-BOX DOORS.

The Sioux City & Pacific Railroad Co. renders a bill against the Chicago, Burlington & Quincy Railroad Co. for repairs to the latter's refrigerator car. The repairs were made by the Sioux City & Pacific Railroad Co. in consequence of the refusal of a packing house at Sioux City to load it unless the hinges on the ice-box doors were renewed, it being alleged that they were rusted and further unfit for service.

It is claimed by the road which made the repairs that under the rules the owner is responsible for the renewal of the hinges, and renders bill accordingly.

The Chicago, Burlington & Quincy Railroad Co. refuses to honor the bill on the ground that the car named had been off its lines for several months, and that the road using it is responsible for its condition and for repairs to any damaged parts; that nothing in the Master Car-Builders' Rules can be construed as making the owner responsible for the renewal of the parts cited.

Both parties agree to submit the question for decision to the Arbitration Committee.

#### DECISION.

Cars must be delivered in good running order and returned in as good condition as when received. (See Rule No. 2.) It must be assumed that the Chicago, Burlington & Quincy Railroad Co. complied with the rule cited, since its car was accepted without protest by the various lines over which it passed, and also accepted by the Sioux City & Pacific Railroad Co. If the car was not in the condition contemplated by the rule named, the Sioux City & Pacific Railroad Co. had its remedy in refusing it unless carded.

Its acceptance from another road without a defect card is, under the rules, sufficient evidence that the car was in good condition. If it was not, it assumed responsibility through its neglect of proper inspection.

If the car was unsafe to load, the Sioux City & Pacific Railroad Co. had the privilege, under Rule No. 11, to notify the owner and receive from him disposition of the car. It had no authority to make the repairs or return the car until it had received authority from the owner in compliance with the rule cited.

In the opinion of the committee, the Sioux City & Pacific Railroad Co. cannot, under the rules, expect payment of the bill in question.

*Mr. Rhodes, who was interested in this case, was not a party to this decision.*

#### ARBITRATION CASE No. 55, 1890.

FORT WAYNE & DENVER CITY RAILWAY CO.

*versus*

HOUSTON & TEXAS CENTRAL RAILWAY CO.

WRECKED CAR BEARING DEFECT CARD.

Louisiana Western car No. 313 was wrecked and body destroyed on Fort Worth & Denver City Railway, and was found to bear a card of the Houston & Texas Central Railway Co. for three cracked sills, May 23, 1890.

The Fort Worth & Denver City Railway Co. renders a bill against the Houston & Texas Central Railway Co. for estimated cost of repairing the damage they carded for.

The Houston & Texas Central Railway Company objects to the bill on account of the repairs not having been made by the Fort Worth & Denver City Railway Co.

After correspondence and failure to settle, both parties agreed to refer the case to the Arbitration Committee for decision.

#### DECISION.

The Arbitration Committee is of the opinion that a defect card is an acknowledgment of responsibility incurred by a railroad company applying the same, but in

accordance with Rule No. 6 of 1889, a company finding a car with defect card attached may make the repairs, provided they are necessary for the safe running of the car. It does not appear in this case that repairs were necessary until car was wrecked. There seems to be no ground, therefore, upon which the Fort Worth & Denver City Railway Co. could base a bill against the Houston & Texas Central Railway Co., as they did not make the repairs.

### ARBITRATION CASE No. 56, 1890.

NEW YORK, CHICAGO & ST. LOUIS RAILROAD CO.

*versus*

LEHIGH VALLEY RAILROAD CO.

WHEEL FLANGES CRACKED BY DEFECTIVE BRAKE.

The Lehigh Valley Railroad Co. delivered two New York, Chicago & St. Louis cars to that company with wheel flanges cracked. The Lehigh Valley Railroad Co. objected to paying for the damaged wheels on the ground that the damage was caused by imperfect hanging of the brakes, causing the brakes, when applied, to bear on the flange of the wheel, thereby causing it to heat and crack. The New York, Chicago & St. Louis Railroad Co. claim that they have a large number of cars with the brake rigging of the same kind as on the two cars in question, and that the New York Central and Lake Shore also have a large number of cars similarly constructed, and in their experience no such trouble results from the hanging of the brakes.

Both parties agree to refer the case to the Arbitration Committee.

### DECISION.

A railroad may refuse to accept a car with the brakes in an inefficient or dangerous condition. (See Rule No. 3, paragraph 8.)

It does not appear in this case that the Lehigh Valley Railroad Co. availed itself of the privilege granted in this rule.

By its acceptance of the car, therefore, it virtually admits that the brakes were in proper condition.

The opinion of the committee is, therefore, that the Lehigh Valley Railroad Co. is responsible for the parts damaged on these cars.

*Mr. Mackenzie, who was interested in this case, was not a party to this decision.*

### ARBITRATION CASE No. 57, 1890.

ST. LOUIS, ARKANSAS & TEXAS RAILWAY CO.

*versus*

HOUSTON & TEXAS CENTRAL RAILWAY CO.

CAR WRECKED AND REBUILT.

The St. Louis, Arkansas & Texas Railway Co. claims that its stock car No. 7289 was destroyed by the Houston & Texas Central Railway Co. and rebuilt by that company in March, 1890. In the month of June following, the St. Louis, Arkansas & Texas Railway Co. reports to the road who rebuilt it that the painting of the car was improperly done, the lettering and marking omitted, and that a foreign drawbar had been placed in the car.

The Houston & Texas Central Railway Co. claims that the repairs were properly made and that the time they were made the drawbars in the destroyed car were sound and were again used in the rebuilt car. It also claims that had one of the drawbars been foreign, the inspector at the point where the car was accepted would have required a defect card, which, however, was not the case.

It further claims that as the car was delivered at Corsicana to the St. Louis, Arkansas & Texas Railway Co. about two months previous to the time the claim was made, the drawbar could not have been foreign to the car. In consequence it declines to give authority to bill against it for the cost of the repairs made.

Both parties agree to refer the matter to the Arbitration Committee.

#### DECISION.

From the correspondence submitted, the Houston & Texas Central Railway Co. acknowledges having destroyed the car, and claims to have rebuilt it in a proper manner and with material standard to the car. It further appears that the car was accepted by the car owner after it had been rebuilt, without any question.

The proper time to object to the car was when it was delivered by the Houston & Texas Central Railway Co. to the owner. The fact of its acceptance may be construed as its being in proper condition at that time. If it was not, the St. Louis, Arkansas & Texas Railway Co. failed to avail itself of the privileges of the rules of interchange to refuse the car until properly repaired or carded by the Houston & Texas Central Railway Co.

The opinion of the committee is therefore, that the St. Louis, Arkansas & Texas Railway Co., having accepted their car without objection at the time of its delivery cannot properly render bill for wrong drawbar or improper workmanship two months after the car has been in its possession.

#### MINUTES OF MEETING HELD IN CHICAGO, DECEMBER 17, 1890.

Members present— Messrs. F. D. Casanave, Chairman; G. W. Rhodes and M. M. Martin.

Messrs. J. W. Marden and John Mackenzie, who could not attend the meeting, subsequently concurred in the following decisions:

#### ARBITRATION CASE NO. 58, 1890.

HOUSTON & TEXAS CENTRAL RAILWAY CO.

*versus*

STREET'S WESTERN STABLE CAR LINE.

RATES FOR WHEEL AND AXLE WORK.

The Houston & Texas Central Railway Co. rendered a bill against Street's Western Stable Car Line in August, 1890, for wheels applied to Street's Western Stable Car Line, car No. 138, for two new wheels and one new axle, with \$1.50 for labor plus ten per cent of total, less a credit for one scrap wheel, one second-hand wheel and one second-hand axle; net amount of bill, \$16.23.

Street's Western Stable Car Line claims that the bill is not correct as the rates of charge and credit do not agree with the Master Car-Builders' rates for 33-inch wheels.

They also claim that the ten per cent should not be added until after the credit for scrap has been deducted, and claim that the bill should be made out so as to amount to \$14.30 net.

The Houston & Texas Central Railway claims that the rates charged for wheels and axles is exactly what they cost laid down at their shop, and the credits allowed are just what the materials are worth to them.

After correspondence on the subject, both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

As the bill referred to is for repairs made in August, 1890, the rules of 1889 are applicable in this case, and as Rule 12 provides certain rates to be charged for wheels and axles, as well as credits to be allowed for second-hand wheels and axles which the Houston & Texas Central Railway Co. has not used in making out the bill in question, it is the opinion of the Arbitration Committee that the bill as rendered is not correct. The bill should be rendered in accordance with the rates fixed by the rule referred to, and the ten per cent should be added after the credits for scrap have been deducted, in which case the committee finds that the correct amount of the bill would be \$14.30 as claimed by the Street's Western Stable Car Line.

#### ARBITRATION CASE No. 59, 1890.

WESTERN NEW YORK & PENNSYLVANIA RAILROAD CO.

*versus*

CENTRAL VERMONT RAILROAD CO. (O. & L. C. DIVISION.)

#### WRONG AXLE IN TRUCKS RETURNED.

On March 4, 1890, the Central Vermont Railroad Co., O. & L. C. Division, wrecked Western New York & Pennsylvania car No. 3622 and destroyed the body of the car, at Altona. The Central Vermont Railroad Co. elected to repair and return the trucks of this car to the Western New York & Pennsylvania Railroad, and when these trucks were received by the latter company it was found that one truck had in it a bad axle which did not belong in the truck, and which had been turned down to go into the journal boxes of this truck and had been spoiled by running hot, and had about  $2\frac{1}{2}$  inches of the collar on the end of the axle broken off.

The W. N. Y. & P. asks authority to charge for the defective axle.

The Central Vermont Railroad Co. replies that this axle was in the truck when they wrecked the car, and that it was the only one of the four axles under this car which they allowed to remain in the trucks when they repaired them; and they claim that such being the case they are not responsible for the wrong axle.

After correspondence about the case, the parties in the dispute agree to refer it to the Arbitration Committee for decision.

#### DECISION.

Under Rule 23 of 1889, the Central Vermont Railroad Co., if it elected to return the trucks of this car, was obliged to put them in good order and deliver them, free of freight or other charges, to the Western New York & Pennsylvania Railroad Co. and, under Rule 18 of the same code, any company repairing foreign cars with the wrong material shall be liable for the cost of changing such material to the original standard.

The committee holds that the possession of this car by the Central Vermont Railroad Co. with a wrong axle in the truck, and without a card, was due to improper inspection on their part when they received the car, and it is of the opinion that the Central Vermont Railroad Co. is just as much responsible for the substitution of the proper axle in this truck as though they had placed the wrong axle in the truck themselves, and that the Western New York & Pennsylvania Railroad Co. can therefore collect from the Central Vermont Railroad Co. the cost of substituting the proper axle under the rates provided by the Rules of Interchange.

#### ARBITRATION CASE No. 60, 1890.

ST. LOUIS, ALTON & TERRE HAUTE RAILROAD CO.

*versus*

GEORGIA RAILROAD CO.

#### CHARGE FOR VENTILATOR DOORS.

On July 1, 1890, the St. Louis, Alton & Terre Haute Railroad Co. rendered a bill against the Georgia Railroad Co. based upon a card of the latter railroad company attached to St. L. B. & S. I. car 20653 reading, "2 ventilator doors gone," the amount of the bill being \$23.86. The Georgia Railroad Co. disputes the correctness of the charge, and states that the bill should be for \$10, as \$5 is provided in the Rules of Interchange as the correct charge for one side door.

The St. Louis, Alton & Terre Haute Railroad Co. claims that these ventilator doors were of a special construction, made largely of iron bars and wire netting, and that they were a second set of doors to the car, which had also the usual set of side doors.

After further correspondence, both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

The Rules of Interchange provide that \$5 shall be the charge for one box or stock-car side door applied, no matter what its size or design may be, but when a car is designed for a special purpose, requiring in addition to the usual doors another set of doors, such as ventilator doors on fruit cars, the fixed rates cannot, in the opinion of the committee, be construed as applying to them. In such cases a bill can only be made to cover the actual cost of repairs at the rates for material and labor prescribed by the Rules of Interchange.

It is therefore the opinion of the committee that a bill rendered as above on the Georgia R. R. defect card by the St. Louis, Alton & Terre Haute R. R. is a proper charge and should be paid.

#### ARBITRATION CASE No. 61, 1890.

NELSON MORRIS & CO.

*versus*

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY CO.

#### INDIVIDUAL AND COMPANIES' BILL 10 PER CENT ADDITION.

On October 17, 1890, Nelson Morris & Co. rendered a bill against the Chicago, Milwaukee & St. Paul Railway for repairs to Morris & Co. car No. 6276, based upon



a card issued by the Chicago, Milwaukee & St. Paul Railway Co., calling for twenty-three side sheathing boards broken and side-door run broken. The bill contains an addition of ten per cent before the credit is allowed for scrap.

The Chicago, Milwaukee & St. Paul Railway Co. claims that the ten per cent additional is wholly wrong, and that this rate applies only to railroad companies in rendering bills against private lines.

Nelson Morris & Co. dispute this statement and claim that the rule should work both ways.

After further correspondence, both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

The Rules of Interchange provide in Rule 10, that, in certain cases, bills for repairs to cars belonging to private parties or corporations may contain an addition of ten per cent, but the committee holds that this addition should be made after the credits have been allowed and not before such credits have been deducted, as in the bill already rendered. The rules do not undertake to prescribe whether private parties or corporations, in rendering bill against a railroad company, may add ten per cent in similar cases or not, but it is the opinion of the Arbitration Committee that it is entirely equitable for such private parties or corporations to add ten per cent to bills similar to those upon which they are required to pay ten per cent additional, but the ten per cent should be added after the credits have been allowed in all cases. This bill should therefore be corrected to deduct the credits allowed before the ten per cent is added, and the bill should then be paid.

NOTE.—*The Arbitration Committee would call attention to Rule 10, which, when literally construed, would seem to provide that ten per cent can be added only when repairs are done on account of ordinary wear and tear, bad or inferior design or poor materials failing in fair service, in which case no cards need be attached to the cars, and therefore no cards would accompany bills for the repairs. It would result that no bill for repairs based upon a card should contain an addition of ten per cent, but inasmuch as practice has established the addition of ten per cent to certain bills based upon cards, the committee does not feel justified in construing Rule 10 literally, and they have therefore ruled the above case on principles of equity, because the Chicago, Milwaukee & St. Paul Railway Co. admits that in a similar case the railroad company might add the ten per cent for such repairs, and thereby implies that that railroad company has been accustomed to do so itself.*

*This rule will be called to the attention of the next annual convention so that this matter may be definitely understood after that time.*

#### ARBITRATION CASE NO. 62, 1890.

THE SAVANNAH, FLORIDA & WESTERN RAILWAY CO.

*versus*

NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY CO.

#### IMPROPER CARD, MIXED DRAWBARS.

On September 30, 1890, the Savannah, Florida & Western Railway Co. rendered a bill against the Nashville, Chattanooga & St. Louis Railway Co. for repairs to

Savannah, Florida & Western car No. 1344 upon a card issued by the Nashville, Chattanooga & St. Louis Railway Co. calling for mixed drawbars, properly entered on both sides of the card in indelible pencil, and one damaged end sill, written on one side of the card only, with ordinary lead pencil.

The Nashville, Chattanooga & St. Louis Railway Co. states that the bill contains charges for two drawbars instead of only one, and claims that it should not be charged for repairs of the damaged end sill, because this item on the card had been entered subsequent to the issue of the card, and does not conform with their record.

The Savannah, Florida & Western Railway Co. declines to modify the bill, claiming to have made it out properly, charging for 53 feet of pine for the damaged end sill, and 300 pounds of castings for the mixed drawbar. After failure to effect a settlement, both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

The Committee would call attention to Arbitration Case No. 33, in which it held that a defect card can only be used as voucher in so far as it bears evidence of having been written wholly at one time and by one hand, and it also calls attention to Arbitration Case No. 18, of 1889, in which it is held that a card reading "mixed drawbars" can be used for the replacement of one wrong drawbar only.

The Arbitration Committee is therefore of the opinion that the card accompanying these papers is justification for a bill for the replacement of only one wrong drawbar, and a bill rendered for such repairs only need be accepted by the Nashville, Chattanooga & St. Louis Railway Co. and paid, for the redemption of this card.

#### ARBITRATION CASE NO. 63, 1890.

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY CO.

*versus*

PITTSBURGH & WESTERN RAILWAY CO.

#### DAMAGED DRAFT TIMBERS AND WRONG DRAWBAR.

The Lake Shore & Michigan Southern Railway Co. renders bill against the Pittsburgh & Western Railway Co. for repairs to Detroit, Lansing & Northern car No. 1316 for broken draft timbers and one wrong drawbar, this car having been delivered by the Pittsburgh & Western Railway Co. to the Lake Shore & Michigan Southern Railway Co., carded for the defects named, October 21, 1889.

The Pittsburgh & Western Railway Co. refuses to pay the bill for the wrong drawbar which was removed by the Lake Shore & Michigan Southern Railway Co. while repairing the draft rigging, claiming that its removal was unnecessary for the safe running of the car.

The Lake Shore & Michigan Southern Railway Co. contends that the Pittsburgh & Western Railway Co., having carded for the wrong drawbar, is responsible, while the Pittsburgh & Western Railway Co. acknowledges that it is responsible to the road owning the car, but not to any other which makes repairs in violation of Rule 6.

Both parties agree to refer the matter to the Arbitration Committee for decision.

## DECISION.

From the correspondence submitted it appears that the damaged draft timbers carded for by the Pittsburgh & Western Railway Co. had to be removed before the road to which the Lake Shore & Michigan Southern Railway Co. offered the car would accept it. It does not appear, however, that it was necessary to renew the drawbar. If the repairs had been made to the draft timbers alone, it would have been necessary to detach the card in order to secure payment of the bill, in which case the Lake Shore & Michigan Southern Railway Co., losing evidence of the responsibility of the Pittsburgh & Western Railway Co. for the wrong drawbar, by detaching the card, would then become responsible to the owner for its replacement. In order to protect itself against such a loss it resorted to the changing of the wrong drawbar.

There can be no doubt that the Pittsburgh & Western Railway Co. is responsible for the cost of replacing the wrong drawbar. It repaired the car with the wrong material, and under Rule 20 it is bound to furnish defect card in order that the car may pass back to the owner. This should have been a separate defect card, but as the Pittsburgh & Western Railway Co. failed to issue separate defect cards, and the defective draft timbers had to be removed, the Lake Shore & Michigan Southern Railway Co., in the opinion of the committee, is justified in making the entire repairs called for on the card, and the Pittsburgh & Western Railway Co. should pay the bill.

## ARBITRATION CASE No. 64, 1890.

CINCINNATI, HAMILTON &amp; DAYTON RAILROAD CO.

*versus*

CINCINNATI, NEW ORLEANS &amp; TEXAS PACIFIC RAILWAY CO.

## DAMAGED DRAFT TIMBERS AND WRONG DRAWBAR.

The Cincinnati, New Orleans & Texas Pacific Railroad Co. carded Lake Shore & Michigan Southern car No. 21,119, for one wrong drawbar and damaged end of one draft timber. The car was delivered to the Cincinnati, Hamilton & Dayton Railroad Co., which claims that while being moved over its lines, repairs to the damaged draft timbers became necessary. It made the repairs and also changed the drawbar and rendered bill against the Cincinnati, New Orleans & Texas Pacific Railway Co. for the total cost of repairs. The latter road disputes the charge for the drawbar on the ground that replacement of odd or wrong parts can only be made by the road owning the car, unless it can be proved that such wrong material endangered the safety of the car, and quotes decision No. 30 rendered by the Arbitration Committee, in support of this defense.

Both parties agree to refer the case to the Arbitration Committee for decision.

## DECISION.

The decision in case No. 30 is not a parallel case to that under dispute, because the car was carded only for wrong material, whereas, in the present case, the car was carded for both wrong material and damage to one of the draft timbers.

This is a parallel case to No. 63, the argument to which applies equally to this case. In the opinion of the committee, the bill rendered by the Cincinnati, Hamilton & Dayton Railroad Co. is just and in accordance with the rules, and should be paid.

MINUTES OF MEETING HELD IN CHICAGO, MARCH 6, 1891.

Members present: Messrs. F. D. Casanave, chairman; G. W. Rhodes and M. M. Martin.

Messrs. J. W. Marden and John Mackenzie, who could not attend the meeting, subsequently concurred in the following decisions:

ARBITRATION CASE No. 65, 1891.

CHICAGO, BURLINGTON & NORTHERN RAILROAD CO.

*versus*

DES MOINES UNION RAILWAY CO.

CAR DESTROYED AND NOT REBUILT IN 60 DAYS.

On January 4, 1890, Chicago, Burlington & Northern Railroad Co. car No. 483 was damaged by fire on a siding of the Des Moines Union Railway; the latter company claimed that it was not responsible, and a dispute arose which was referred to the Arbitration Committee, and decided in Arbitration Case No. 51, throwing the responsibility upon the Des Moines Union Railway Co. This company repaired the car, but it was not returned in proper condition to the Chicago, Burlington & Northern Railroad Co. until January 8, 1891. The latter company claims that Rule No. 22 of the Master Car-Builders' Association provides that repairs shall be made and the car returned inside of sixty days, and that inasmuch as this car was held one year and four days, the Chicago, Burlington & Northern Railroad Co. was deprived of its use for a period of 309 days over the time allowed by the Association rules for its return, and it claims that the Des Moines Union Railway Co. should reimburse it for the loss of the service of this car, and in order to determine what should constitute an equitable charge, the Chicago, Burlington & Northern Railroad Co. claims that the mileage made by its cars on foreign lines for the first six months of 1890 averaged  $32\frac{88}{100}$  miles per day, which at three-fourth cent per mile would amount to \$75.39, and it renders a bill against the Des Moines Union Railway Co. for this amount.

The Des Moines Union Railway Co. objects to the bill on the ground that the responsibility for the damage to this car was in dispute, that it was referred to the Arbitration Committee, and that the car was returned inside of sixty days after the decision of the Arbitration Committee was rendered.

The matter was referred by the Chicago, Burlington & Northern Railroad Co. to the Arbitration Committee for settlement. The Des Moines Union Railway Co. has been asked to abide by the decision of the Arbitration Committee, but has not replied to the communication.

DECISION.

Subscribers to the M. C.-B. Rules agree to be governed by the rules, and according to Rule No. 22, the rebuilding of a car destroyed must be completed within sixty days from the original date of damage or destruction, and a failure to do so is a

violation of this rule. However, as no penalties are prescribed for such violation of this rule, the Arbitration Committee cannot undertake to decide what would be a just settlement of the case in dispute.

### ARBITRATION CASE NO. 66, 1891.

MOBILE & OHIO RAILROAD CO.

*versus*

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC RAILWAY CO.

WRONG OIL BOXES REPLACED ON INTERMEDIATE ROAD.

The Mobile & Ohio Railroad Co. rendered a bill against the Cincinnati, New Orleans & Texas Pacific Railway Co., September, 1890, for replacing two oil boxes on Wabash car No. 18033, upon a Cincinnati, New Orleans & Texas Pacific Railway Co. defect card, issued August 6, 1890, calling for two odd oil boxes.

The Cincinnati, New Orleans & Texas Pacific Railway Co. objects to the payment of the bill, and refers to decision No. 30 of the Arbitration Committee.

Both parties agree to refer the matter to the Arbitration Committee for decision.

#### DECISION.

The argument in Arbitration Case No. 30 applies to this case. The acceptance of the car, with these two odd oil boxes, by the Mobile & Ohio Railroad Co. proves that the odd oil boxes did not impair the safety of the car; the removal of the oil boxes was therefore not in accordance with Rule No. 6, which provides that repairs done upon a defect card must be made only when necessary to the safe running of the car. The Cincinnati, New Orleans & Texas Pacific Railway Co., which applied the oil boxes, was responsible for their replacement to the owner of the car, and not to any other party, unless the renewal of the wrong material was necessary to the safety of the car.

In the opinion of the committee, therefore, the bill rendered by the Mobile & Ohio Railroad Co. against the Cincinnati, New Orleans & Texas Pacific Railway Co. is not a proper charge.

### ARBITRATION CASE NO. 67, 1891.

NEW YORK, ONTARIO & WESTERN RAILWAY CO.

*versus*

LEHIGH VALLEY RAILROAD CO.

BILL ON CARD NOT PROPERLY FILLED IN ON BOTH SIDES.

The New York, Ontario & Western Railway Co. rendered a bill in October, 1890, against the Lehigh Valley Railroad Co. for repairs to N. Y. O. & W. car No. 2324, upon a Lehigh Valley Railroad Co. defect card issued July 28, 1890, one side of which calls for "One door gone, one draw sill damaged, floor damaged, end damaged, damaged draw timber," and the other side calls for "One door gone."

The Lehigh Valley Railroad Co. objects to the bill, stating that it is only responsible for one door gone, as the other defects mentioned on one side of the card were not placed upon it by any of its inspectors, but that it was done by some unauthorized person after the defect card was issued. It further states that had these

additional defects been added by any of its men, both sides of the card would have been filled in precisely alike.

The New York, Ontario & Western Railway Co. claims that the Lehigh Valley Railroad Co. is responsible for the damage to this car, as the damage corresponds with that noted on the face of the defect card written in ink, and to its mind in the same handwriting. It admits that there is a difference in the items named on opposite sides of the card, but thinks that any inspector would be justified in receiving the car with this card.

It also stated that it is often customary for a road to fill in a defect card, as this one is claimed to have been originally filled in, at the shop or some point other than the interchange point, or before it passed the inspection of a connecting line, and when offered to a foreign road, the receiving inspector would demand an addition to the card. The same man might fill in the additional defects with a different grade of ink or different pen, and cause a greater difference in the handwriting than that on the attached card.

It also calls attention to the similarity of the letters "a," "o" and "r" in the two lines, and also states that it is customary in filling out defect cards to draw a line through the blank space below to prevent what is claimed to have been done in this case, the adding of further defects.

Both parties agree to refer the matter to the Arbitration Committee for decision.

#### DECISION.

The committee cannot be expected to settle disputes based upon a question of veracity. Rule No. 5 requires that when a defective car is offered, the inspector of the receiving road may demand a defect card, upon both sides of which the existing defects shall be entered in ink or indelible pencil. A defect card made in accordance with the rule is authority to bill against the road giving such card.

In the case in dispute, it is the opinion of the committee that the card is only authority to bill against the Lehigh Valley Railroad Company for the items specified upon both sides of the card.

### ARBITRATION CASE NO. 68, 1891.

CHESAPEAKE & OHIO RAILWAY CO.

*versus*

CINCINNATI, SANDUSKY & CLEVELAND RAILROAD CO.

BILL ON CARD ISSUED IRREGULARLY.

In October, 1890, the Chesapeake & Ohio Railway Co. rendered bill against the Cincinnati, Sandusky & Cleveland Railroad Co. for repairs to C. C. C. & I. car No. 2934, upon a Columbus, Hocking Valley & Toledo Railroad defect card issued by a C. H. V. & T. inspector, who erased the words "Columbus, Hocking Valley & Toledo R. R. Co." from the card and placed thereon, "From C. S. & C."

The Cincinnati, Sandusky & Cleveland Railroad Co. objects to the bill, on the ground that the card was not issued by any of its inspectors, and claims to have no knowledge whatever of the damage in question.

The matter was taken up with the Columbus, Hocking Valley & Toledo Railway Co., but it disclaims any responsibility, on the ground that the car was not carded

according to the M. C.-B. Rules, and that the responsibility rests with the road receiving it in that condition; also, that its inspector who carded the car did so in the absence of the C. S. & C. inspector in order to expedite the freight, with the intention of removing the card when the car was returned, and advised the C. S. & C. inspector what had been done in the matter, which he states was acknowledged by the latter inspector as being all right.

Both parties agree to refer the matter to the Arbitration Committee for decision.

DECISION.

The bill rendered by the Chesapeake & Ohio Railway Co. against the Cincinnati, Sandusky & Cleveland Railroad Co. is based upon a defect card issued by another railroad company, and upon no authority of the Cincinnati, Sandusky & Cleveland Co., and in the opinion of the committee there is nothing in the correspondence to show that the Cincinnati, Sandusky & Cleveland Railroad Co. is responsible for the charges mentioned in this bill, and it therefore should be withdrawn.

ARBITRATION CASE No. 69, 1891.

SAN ANTONIO & ARANSAS PASS RAILWAY CO.

*versus*

TEXAS & PACIFIC RAILWAY CO.

BROKEN DRAFT TIMBER—DISPUTE OVER TIME CHARGED.

The San Antonio & Aransas Pass Railway Co. rendered bill for \$5.79 in October, 1888, against the Texas & Pacific Railway Co. for replacing one broken draft timber on San Antonio & Aransas Pass car No. 1034 on Texas & Pacific Railway defect card calling for one draft timber broken.

The Texas & Pacific Railway Co. objects to the labor charges for twenty hours in doing the work, stating that it is excessive.

The San Antonio & Aransas Pass Railway Co. states that it is the actual cost to them for doing the work, as it was necessary to take down the old draft timber, make a new one, and put the same under the car.

Both parties agree to refer the case to the Arbitration Committee for decision.

DECISION.

The committee finds that the charges for labor are at the rate of 20 cents per hour, fixed by Rule No. 26 of the Master Car-Builders' Rules, and this is as far as the committee can arbitrate in the case.

In the opinion of the committee, the proper number of hours to be charged and paid for must be agreed upon by the parties interested. See Arbitration Case No. 28.

ARBITRATION CASE No. 70, 1891.

BOSTON & ALBANY RAILROAD CO.

*versus*

KANSAS CITY DRESSED BEEF LINE.

BILLS AGAINST PRIVATE LINES FOR REPAIRS ACCOUNT ORDINARY WEAR AND TEAR.

The Boston & Albany Railroad Co. rendered bills in the years 1887, 1888, 1889 and 1890 against the Kansas City Dressed Beef Line for repairs to the latter

company's cars, on account of ordinary wear and tear under the provisions of Master Car-Builders' Rule No. 10.

The parts renewed consist principally of brake shoes, bearings, connections, bolts, etc.

The Kansas City Dressed Beef Line objects to the payment of the bills.

Both parties agree to refer the cases to the Arbitration Committee for decision.

#### DECISION.

The Arbitration Committee has not carefully gone through the mass of small bills attached to the correspondence in this case to ascertain whether the proper rates are charged in each item, but if the bills rendered are in accordance with the rates prescribed by the Rules of Interchange, and are for the repair of parts which failed on account of ordinary wear and tear, as provided in Rule No. 10, the Arbitration Committee is of the opinion that the bills are correct, and should be paid by the Kansas City Dressed Beef Line.

### ARBITRATION CASE NO. 71, 1891.

NEW YORK & NEW ENGLAND RAILROAD CO.

*versus*

FITCHBURG RAILROAD CO.

#### AGE OF CAR DESTROYED.

On January 19, 1891, the New York & New England Railroad Co. destroyed a car belonging to the Fitchburg Railroad Co. The Fitchburg Railroad Co. made bill against the New York & New England Railroad Co. for the value of the car, less depreciation from the time when the car last had general repairs, costing \$78.30. The New York & New England Railroad Co. objects to the bill, claiming that depreciation should be from the time the car was built, and not from the time it was generally repaired. Further correspondence shows that the car was originally built in May, 1879, and that in August, 1889, it received the repairs of \$78.30, above mentioned, and the Fitchburg Railroad Co. claims that depreciation should be from this latter date.

Both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

Rule No. 23 provides that the depreciation due to age shall be estimated at 6 per cent per annum upon the yearly depreciated value, etc., provided, however, that allowance for depreciation shall in no case exceed 60 per cent of the value new.

It is the opinion of the committee that the depreciation here referred to is intended to be figured from the date when the car was built or completely rebuilt, and not from the date when repairs, only, were made, and that the bill is therefore not rendered upon a proper basis.

*Mr. Marden being interested in this case, was not a party to this decision.*



## ARBITRATION CASE NO. 72, 1891.

OMAHA &amp; ST. LOUIS RAILWAY CO.

*versus*

ARMOUR-CUDAHY REFRIGERATOR LINE.

BILLS FOR REPAIRS TO PRIVATE LINE CARS, CARED FOR BY A RAILROAD COMPANY.

On November 13, 1890, the Omaha & St. Louis Railway Co. rendered bills against the Armour-Cudahy Refrigerator Line for labor and material expended in repairing Armour-Cudahy Refrigerator Line cars Nos. 3014 and 3015, on account of failure due to ordinary wear and tear.

The Armour-Cudahy Refrigerator Line objects to the bills on the ground that they are based on Master Car-Builders' Rule No. 10, and claims that their cars are cared for by the Chicago, Milwaukee & St. Paul Railway Co. After further correspondence in the matter, the papers are returned with letter from J. N. Barr, Superintendent Motive Power, Chicago, Milwaukee & St. Paul Railway Co., in which he says the cars in question are cared for by that company so far as bills for repairs are concerned.

Both parties agree to refer the case to the Arbitration Committee for decision.

## DECISION.

The Arbitration Committee finds in Sechrist's Guide, that bills for repairs of these cars are to be sent to the Chicago, Milwaukee & St. Paul Railway Co., and it is therefore of the opinion that the cars are cared for by a railroad company as intended by that expression in Rule No. 10 of the Rules of Interchange, and therefore no bills for repairs of these cars are proper except such as would be proper against cars belonging to a railroad company, and that the bills in question should be withdrawn.

## ARBITRATION CASE NO. 73, 1891.

PITTSBURGH &amp; LAKE ERIE RAILROAD CO.

*versus*

NEW YORK, LAKE ERIE &amp; WESTERN RAILROAD CO.

## CAR DESTROYED. VALUE OF COKE RACK.

On December 31, 1890, the Pittsburgh & Lake Erie Railroad Co. rendered bill against the New York, Lake Erie & Western Railroad Co. for the values of bodies of Pittsburgh & Lake Erie Railroad cars destroyed in wreck at Cleveland, Ohio, October 8, 1890. Car No. 2102 mentioned in this bill showed the value of body new \$248.00, to which item the New York, Lake Erie & Western Railroad Co. objects, claiming that it should be \$220.00 instead. The Pittsburgh & Lake Erie Railroad Co. states that this car had received an extension in the shape of a coke rack at a cost of \$28.00, and that they had therefore added this figure to the figure \$220.00 allowed by the rules for such a car as this was before the coke rack was added.

The New York, Lake Erie & Western Railroad Co. claims that this is not permissible under the rules, and after further correspondence both parties agree to refer the case to the Arbitration Committee for decision.

## DECISION.

The Arbitration Committee would refer to Arbitration Case No. 53 for an argument in detail, which applies equally well to this case, and it is of the opinion that the bill as rendered is not correct, and the committee considers it is obliged to rule such cases in this way until the Rules of Interchange are made more complete in this respect, by fixing values to be charged for various classes of cars.

## ARBITRATION CASE NO. 74, 1891.

CINCINNATI, NEW ORLEANS &amp; TEXAS PACIFIC RAILWAY CO.

*versus*

RICHMOND &amp; DANVILLE RAILROAD CO.

VALUE OF CAR DESTROYED. CLAIMED TO BE SPECIAL FRUIT CAR.

The Richmond & Danville Railroad Co. destroyed A. G. & S. car No. 9551, belonging to the Cincinnati, New Orleans & Texas Pacific Railway Co. The latter company rendered bill rating car body at \$300, which was an 8-wheel box car, 32 feet long.

The Richmond & Danville Railroad Co. claims that this rating is not correct, and that it should be \$275, in accordance with the rate prescribed by the rules.

The Cincinnati, New Orleans & Texas Pacific Railway Co. claims that this was a ventilated fruit car, with eight side gratings and shutters, two end window gratings, two globe ventilators and special doors, which together make the car cost much more than \$25.00 in excess of the standard box car, and it cites Arbitration Case No. 60, where an unusual price was ruled permissible for a fruit car door by the Arbitration Committee.

Both parties agree to refer the case to the Arbitration Committee for decision.

## DECISION.

Case No. 60, quoted by the Cincinnati, New Orleans & Texas Pacific Railway Co., is not a parallel case. In that case the question was one of repairs to a damaged car and the rules do not prescribe any fixed rate for a special ventilated car door, but they do provide that items not specified shall be charged at current market prices.

Arbitration Case No. 53 is a parallel case to this one, and the argument therein used applies equally to this case, and it is the opinion of the Arbitration Committee that the bill as rendered is not correct, and should be made to conform to the rate provided by the rules for box cars 32 feet long.

*The Arbitration Committee requests that members of the Association and parties to the Rules of Interchange who have any suggestions to make as to amendments which should be incorporated in the Rules of Interchange when revised in June, will communicate such suggestions to the Secretary of the Association prior to May 1, 1891, so that the committee may have an opportunity to consider these suggestions, and put them in proper shape for presentation to the Association.*

MINUTES OF MEETING HELD IN NEW YORK, MAY 7 AND 8, 1891.

Members present—Messrs. F. D. Casanave, *Chairman*; M. M. Martin, John Mackenzie, G. W. Rhodes and J. W. Marden.

ARBITRATION CASE No. 75, 1891.

CHICAGO, BURLINGTON & QUINCY RAILROAD CO.

*versus*

DENVER & RIO GRANDE RAILROAD CO.

CAR DAMAGED BEYOND REPAIR AND DELIVERED TO ANOTHER ROAD.

Chicago, Burlington & Quincy Railroad Co's flat car No. 7435 was damaged by the Denver & Rio Grande Railroad Co., all the sills and stringers being broken, and the body, therefore, practically destroyed.

The car was carded by the Joint Car Inspector at Denver, and in accordance with a local understanding or agreement between the several railroads at that point, it was delivered to the Burlington & Missouri River Railroad Co. It could not be safely handled, and the Burlington & Missouri River Railroad Co. asked the owner for authority to destroy it, and to take up directly with the Denver & Rio Grande Railroad Co. the question of settlement for the destroyed body.

The Chicago, Burlington & Quincy Railroad Co. claims that under Rule No. 3, Paragraph Z, the car should have not been accepted by the Burlington & Missouri River Railroad Co. This road, however, was obliged to do so in accordance with certain rules of local joint inspection already referred to.

The Chicago, Burlington & Quincy Railroad Co. further claims that the Denver & Rio Grande Railroad Co. should either repair the car or settle for it under the Master Car-Builders' Rules.

The Denver & Rio Grande Railroad Co. objects to the proposed settlement for a destroyed body, and claims that it should be charged the estimated cost of repairs to the parts for which it is liable as per defect card.

Both parties agree to refer the dispute to the Arbitration Committee for decision.

DECISION.

The rules of interchange provide as follows :

"Rule No. 2. Cars must be delivered in good running order, etc.

"Rule No. 3. Cars may be refused for any of the following defects :

"Paragraph z. Special or general defects of bodies or trucks, which render cars unsafe to run."

It is evident from the correspondence submitted and the defect card furnished, that the car in question was not delivered by the Denver & Rio Grande Railroad Co. in the condition contemplated by Rule No. 2. It is clear, also, that under Rule No. 3, Paragraph Z, the Chicago, Burlington & Quincy Railroad Co. may refuse to receive it in the condition named.

In view of such refusal, the duty devolving upon the road which damaged the car is clearly defined in Rule No. 2, which requires it to return the car in as good general condition as when received.

It is therefore the opinion of the committee that the Denver & Rio Grande Railroad Co. should either repair the car or settle for the body under the Rules.

The local joint inspection rule, which in this case obliged the Burlington & Missouri River Railroad to accept from the Denver & Rio Grande Railroad a foreign car in an unsafe condition to run, is contrary to the spirit of the Master Car-Builders' Rules, and does not in any way relieve any railroad from the responsibility incurred under said rules.

NOTE.—*Mr. Rhodes being interested in this case, was not a party to this decision.*

### ARBITRATION CASE NO. 76, 1891.

WABASH RAILROAD CO.

*versus*

LAKE ERIE & WESTERN RAILROAD CO.

#### BROKEN END SILL—CHARGES FOR LINING, SIDING, ETC.

The Wabash Railroad Co. rendered bill against the Lake Erie & Western Railroad Co. upon the latter's defect card for broken end sill on Wabash car No. 1602.

The bill contains charges for siding, lining, flooring and bolts, the amount of the bill being \$11.51.

The Lake Erie & Western Railroad Co. objects to the bill on the ground that as the defect card only calls for a broken end sill, it should not be charged for siding, lining, flooring, etc. It expresses its willingness to pay \$5.00 for the repairs for which it assumes responsibility, and no more.

The Wabash Railroad Co. claims that in removing the broken end sill, the siding, lining and flooring were destroyed, and the work of replacing the end sill could not be done without damage to the other parts, and that in consequence the bill as rendered is correct.

This statement is disputed by the Lake Erie & Western Railroad Co., which claims that the work could be done without damaging the additional parts, but it does not show how.

Both parties agree to refer the dispute to the Arbitration Committee for decision.

#### DECISION.

The Arbitration Committee would call attention to Arbitration Case No. 43, Western New York & Pennsylvania Railroad Co. versus Pittsburgh & Western Railroad Co., in which it ruled that the items of expense incurred in repairing a part damaged upon a defect card are a proper charge when such items are necessary to properly repair the damaged parts. In the case in dispute it is certainly equitable that the Lake Erie & Western Railroad Co. should pay for the material and labor necessary to replace the end sill and restore the parts connected to it to as nearly as possible the same condition as they were previous to the breakage of the end sill, and a charge for such work is, in the opinion of the committee, entirely proper, but the committee is not in a position to decide whether the amount of the charge is correct; the parties to this dispute must agree upon this point.

NOTE.—*Mr. Martin being interested in this case, was not a party to this decision.*

## ARBITRATION CASE NO. 77, 1891.

LOUISVILLE, EVANSVILLE &amp; ST. LOUIS CONSOLIDATED RAILROAD CO.

*versus*

LOUISVILLE SOUTHERN RAILROAD CO.

TRUCKS RETURNED CARDED FOR ONLY A PORTION OF THE DEFECTS.

The Louisville Southern Railroad Co. destroyed the body of Louisville, Evansville & St. Louis car No. 2438 and returned the trucks to the owner with a defect card calling for three oil boxes broken, one column guide broken, one side-bearing broken.

Upon receipt of the trucks by the Louisville, Evansville & St. Louis Railroad Co., it was found that in addition to the defects enumerated on the defect card a truck bolster was also broken.

The Louisville, Evansville & St. Louis Railroad Co. made the necessary repairs to the parts carded, and also to the truck bolster, and rendered bill amounting to \$8.92 against the Louisville Southern Railroad Co.

The Louisville Southern Railroad Co. objects to that part of the bill containing charges for the truck bolster upon the ground that it was an old defect for which they were not responsible.

The Louisville, Evansville & St. Louis Railroad Co. claims that, in accordance with the Master Car-Builders' Rules, the Louisville Southern Railroad Co., when accepting the car in question, should have protected itself by requiring the line from which the car was received to furnish a defect card for the broken bolster, and having failed to do so, it becomes liable for the broken part. It also claims that, in accordance with Rule No. 24, a company returning the trucks of a destroyed car must put them in good order or card them for all the defects.

Both parties agree to refer the case to the Arbitration Committee for decision.

## DECISION.

The committee would call attention to Arbitration Case No. 59, in which it ruled that a company returning a truck with a wrong axle was liable to the owner for its replacement with one standard to the car, notwithstanding that the road destroying the car had not placed the wrong axle under it, because it had failed to protect itself in accepting the car.

The case in dispute between the Louisville, Evansville & St. Louis Railroad Co. and the Louisville Southern Railroad Co. is a parallel case to that referred to in Case No. 59, and the argument in that case applies to the one now in question.

The committee is, therefore, of the opinion that the Louisville Southern Railroad Co. is liable for the repairs necessary to put the truck in good condition, and that a bill rendered in accordance with this rule is correct.

## ARBITRATION CASE NO. 78, 1891.

TEXAS &amp; PACIFIC RAILWAY CO.

*versus*

ST. LOUIS &amp; SAN FRANCISCO RAILROAD CO.

WRONG DRAWBAR CARDED AND BROKEN IN SERVICE.

The St. Louis & San Francisco Railroad Co. carded Southern Kansas Car No. 3278 for one wrong drawbar.

It appears from the correspondence submitted that this car was subsequently delivered to the Texas & Pacific Railway Co., and while in service on that line, the wrong drawbar was broken.

The Texas & Pacific Railway Co. rendered bill against the St. Louis & San Francisco Railroad Co., which issued a defect card for the wrong drawbar.

The latter road claims that it is not responsible to the Texas & Pacific Railway Co. for the wrong drawbar, which should only have been renewed by the owner of the car.

In support of its position, it cites Case No. 30.

The Texas & Pacific Railway Co. cites as its authority to insist upon the payment of the bill, Arbitration Case No. 63.

Both parties agree to submit the case to the Arbitration Committee for decision.

## DECISION.

The Arbitration Committee would call attention to Arbitration Case No. 30, which is parallel to that under consideration.

In addition to the argument in the case cited, it may be said :

Rule No. 6 of the Master Car-Builders' Code provides that any company finding a car with a defect card attached may make the repairs noted on the card, *providing such repairs are necessary to the safe running of the car, etc.*

The committee must consider the fact that the Texas & Pacific Railway Co. accepted the car with the wrong drawbar, and moved it on its line as proof that the drawbar was considered safe. If not, it had its remedy in refusing the car when offered to it, or substituting at that time a safe drawbar for the one which it considered unsafe. The failure to do so renders the road accepting the car with the wrong part liable in case of its breakage.

Case No. 63 referred to by the Texas & Pacific Railway Co. is not a parallel case. The committee, is, therefore, of the opinion that the bill rendered by the Texas & Pacific Railway Co. against the St. Louis & San Francisco Railroad Co. is not in accordance with the Rules of Interchange.

## ARBITRATION CASE NO. 79, 1891.

NASHVILLE, CHATTANOOGA &amp; ST. LOUIS RAILWAY CO.

*versus*

CINCINNATI, NEW ORLEANS &amp; TEXAS PACIFIC RAILWAY CO. (A. G. S. DIV.)

## WRONG DRAWBAR CONSIDERED UNSAFE BY RECEIVING ROAD.

The Alabama Great Southern Railroad Co. placed a wrong drawbar in Louisville & Nashville Car No. 4046, and issued a defect card for the same. The car was delivered to the Louisville & Nashville Railroad Co. and by that road to the Nashville, Chattanooga & St. Louis Railway Co.

Upon the acceptance of the car by the latter company, the wrong drawbar was considered unsafe for a 60,000-pound car. The weight of the drawbar was 130 pounds.

As the car was loaded, in order not to delay its movement, the drawbar was removed, and another, weighing 195 pounds, which was standard to the car, substituted by the Nashville, Chattanooga & St. Louis Railway Co. which rendered bill against the Alabama Great Southern Railroad Co. for the drawbar applied.

The bill is refused by the Cincinnati, New Orleans & Texas Pacific Railway Co., operating the Alabama Great Southern Railroad, on the ground that the Louisville & Nashville Railroad Co., owners of the car, did not consider it necessary to change the drawbar after the acceptance of the car from the Alabama Great Southern Railroad Co.

The Cincinnati, New Orleans & Texas Pacific Railway Co. further claims that in accordance with a decision of the Arbitration Committee in Case No. 30, the cost of replacement is not properly chargeable to the Alabama Great Southern Railroad Co.

Both parties agree to refer the case in dispute to the Arbitration Committee for decision.

## DECISION.

The first objection to the payment of the bill urged by the Cincinnati, New Orleans & Texas Pacific Railroad Co. is that as the Louisville & Nashville Railroad Co., owners of the car, did not remove the drawbar, that company considered it safe, and the inference is that if it was considered safe by the Louisville & Nashville Railroad Co. it was equally so for any other railroad company.

This claim is diametrically opposed to the spirit of the Rules of Interchange. In accordance with Rule No. 2, cars must be delivered in good running order. Paragraph "Z" of Rule No. 3 provides that cars may be refused for special or general defects to bodies or trucks, which render cars unsafe to run. It is, therefore, evident that under Rule No. 3, the Nashville, Chattanooga & St. Louis Railway might properly refuse the car in question with a drawbar which it considered unsafe.

It is also equally clear that each road must be the sole judge of the safety of a car to run over its line. Otherwise, we should have to admit the principle that the

road accepting a car is bound by the judgment and inspection of the road offering it, which this committee cannot do.

The Nashville, Chattanooga & St. Louis Railway Co. could not refuse the car in question, because the objectionable or defective part was covered by a regular Master Car-Builders' defect card, bearing upon its face the acknowledgment of the responsibility for the wrong part. By accepting the car, therefore, the action of the road was strictly in accordance with the rules, and the replacement of the drawbar was in accordance with its judgment as to its safety.

The bill rendered is also upon the authority of the card, and in conformity with the Rules of Interchange.

The second reason given by the Cincinnati, New Orleans & Texas Pacific Railroad Co. for its refusal of the bill is based on Arbitration Case No. 30, which is not considered by the committee a parallel case to the one under consideration. In Arbitration Case No. 30, the facts were that a railroad company accepted a car with wrong parts which were damaged while in transit over that line, and had to be renewed. The fact that the car was accepted with the wrong parts and moved over the line, shows that they were considered safe at the time of acceptance, and the damage was, therefore, chargeable to the company causing it.

In the case under consideration, however, it appears from the correspondence submitted that the Nashville, Chattanooga & St. Louis Railway Co. did not move the car over its line until after the wrong drawbar had been removed. The decision as to its safety was settled at the time of the acceptance of the car. Had that company damaged or broken the drawbar at some point on its line, the decision of the committee would have been that the road breaking the wrong drawbar was liable.

Under the circumstances which existed in this case, however, the committee is of the opinion that the bill rendered by the Nashville, Chattanooga & St. Louis Railway Co. is entirely proper.

#### ARBITRATION CASE No. 80, 1891.

PENNSYLVANIA RAILROAD CO.

*versus*

RICHMOND & DANVILLE RAILROAD CO.

#### ROOF BLOWN OFF, CAR ORDERED HOME. FREIGHT CHARGES.

October 3, 1890, the Pennsylvania Railroad Co. notified the Richmond & Danville Railroad Co. that Richmond & Danville car No. 1511 was at Altoona with the roof blown off, and asked if it should be repaired at that point or sent home.

The Richmond & Danville Railroad Co. directed that the car be returned to Alexandria, Va. This was done.

The Pennsylvania Railroad Co. made a charge of \$16.20 for freight, covering the return of the car over its line.

The Richmond and Danville Railroad Co. disputes the bill on the ground that it does not believe freight charges are justifiable under the rules.

Both parties agree to refer the case to the Arbitration Committee for decision.



## DECISION.

The Rules of Interchange are silent on the point in dispute. In deciding the case, therefore, the committee must construe the rules in accordance with its knowledge of the intent of the framers of the rules, and also on a basis of equity.

The committee believes that the framers of Rule No. 11 did not intend that freight charges should be rendered in case of a car returned to its owner.

The rule named provides that a car unsafe to load, etc., should be reported to its owner, who must be advised of all existing defects, and who must furnish two home cards, noting upon them the route over which the car is to be returned to its owner.

It is very certain that the information called for on these cards was intended to designate the route over which the car had passed to the point where it became unserviceable, and its return, free of charge, over such lines is based upon the principle that such roads having temporarily owned the car and derived profit from it while on its line, are bound to return it to the owner.

This principle, we think, is clearly in accordance with Rule No. 2, which states that the cars must be delivered in good running order, and returned in as good general condition as when received.

It would not seem equitable that the companies which have profited by the revenue derived from the movement of the car over their lines should, after it had become unserviceable by reason of service given these lines, be returned when unserviceable at the expense of the company owning the car.

If that were the case, great hardships would be placed upon car owners whose cars are, in the course of ordinary interchange, carried to points very far distant from the owner's line.

To illustrate: A Boston & Albany car might be diverted from its immediate connections to some point on the Pacific coast, and at that point might be found in an unserviceable condition until it had received general repairs. If the Boston & Albany Railroad Co. had to pay freight charges to the lines over which the car must pass to its owner, it would probably amount to more than the value of the car. The Boston & Albany Railroad Co. could not require any road to make the necessary repairs; under the M. C. B. Rules no company could require to have a car repaired at the shop of another road. It would therefore seem equitable that the lines which derived profit from the use of the car should willingly return it to the owner, free of freight charges, and the principles involved in this conclusion, we believe, are borne out by the provisions of Rule No. 2.

The committee is therefore of the opinion that in the case in dispute, the Richmond & Danville car should have been returned by the Pennsylvania Railroad Co. to the owner without freight charges, provided, that no car service was paid by the Pennsylvania Railroad Co. for the mileage made by the car in this movement, and the Arbitration Committee will recommend to the Association that Rule No. 11 be modified in accordance with this decision.

NOTE.—*Mr. Casanove being interested in this case, was not a party to this decision.*

## ARBITRATION CASE No. 81, 1891.

AMERICAN LIVE STOCK TRANSIT CO.

*versus*

TEXAS &amp; PACIFIC RAILWAY CO.

TEN PER CENT ADDED BY INDIVIDUALS AND COMPANIES. RATES FOR JANNEY  
KNUCKLES.

The American Live Stock Transit Co. rendered a number of bills against the Texas & Pacific Railway Co., upon defect cards issued by the latter for damage to the cars of the former individual company.

In addition to the cost of the necessary repairs, the American Live Stock Transit Co. charges ten per cent, which is objected to by the Texas & Pacific Railway Co. as inconsistent with the Rules of Interchange.

The former company, however, claims that it has been ruled by the Arbitration Committee, in Arbitration Case No. 61, that the charge is proper.

Objection is also made by the Texas & Pacific Railway Co. to the charge of \$5 for one Janney Knuckle, claiming that the proper charge to be made in such cases is \$4, which is the manufacturer's net price for the knuckle.

The American Live Stock Transit Co. claims that the charge of \$5 is proper, because they are compelled to pay \$5 for the same, and that in billing against all other companies it has been the practice to charge the same figure, which has never before been questioned.

Both parties agree to refer the dispute to the Arbitration Committee for decision.

## DECISION.

1st. The committee would refer the parties to the dispute and to the decision rendered in Arbitration Case No. 61, the argument in which, in so far as the addition of ten per cent to the cost of making the necessary repairs upon a defect card is concerned, applies to the case now under consideration. The committee holds, also, in this case that the additional charge of ten per cent is equitable.

2nd. The Rules of Interchange do not state whether freight charges upon manufactured articles may be added to the actual cost of such material. The committee believes that it was the intent of the framers of the rule to, as far as possible, establish a schedule of fixed prices to be charged for material and labor used in repairing cars, as given in Rule No. 26, which would be applicable to all sections of the country, without regard to differences in the cost of transportation. It must be evident that in the absence of such an understanding, great confusion would ensue from the variety of charges that would be made for the same kind of material, owing to the differences in the cost of freight charges, etc.

The adoption of a fixed price was undoubtedly devised to prevent such confusion.

In case of Janney Knuckles, and other manufactured material, it would seem that the only way to prevent disputes and misunderstandings would be to adopt, also, a fixed price, and the price which is less likely to be disputed is that charged by the manufacturer.

In the absence of other authority, and basing their decision upon the probable intent of the framers of the rules, the committee is of the opinion that the charge for manufactured material should be at the manufacturer's prices, and that the price of Janney Knuckle should be corrected accordingly.

### ARBITRATION CASE No. 82, 1891.

RICHMOND & DANVILLE RAILROAD CO.

*versus*

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS RAILWAY CO.

#### FREIGHT CHARGES ON MANUFACTURED ARTICLES.

The Richmond & Danville Railroad Co. rendered bill against the Cleveland, Cincinnati, Chicago & St. Louis Railway Co. for the replacement of a Janney Knuckle, charging \$4.15 for the same.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co. objects to the extra charge of 15 cents, claiming that under Rule No. 26 the charges for manufactured articles must be at the current market prices, which, in its opinion, means the actual net price, exclusive of freight charges.

The Richmond & Danville Railroad Co., on the contrary claims that the extra charge of 15 cents is for freight, and is in accordance with the Master Car-Builders' Rules.

Both parties agree to refer the case in dispute to the Arbitration Committee for decision.

#### DECISION.

The committee would call attention to the argument in Arbitration Case No. 81, which is parallel to the one now under consideration.

For the reasons given in the former case, the committee is of the opinion that the charge for the knuckle should be confined to the price of the manufactured article.

### ARBITRATION CASE No. 83, 1891.

CHICAGO, ST. PAUL & KANSAS CITY RAILWAY CO.

*versus*

CHICAGO, BURLINGTON & NORTHERN RAILROAD CO.

#### DEFECT CARD READING "OLD DEFECTS." RESPONSIBILITY FOR.

The Chicago, St. Paul & Kansas City Railway Co. rendered bill against the Chicago, Burlington & Northern Railroad Co., upon the latter's defect card, for repairs to Chicago, St. Paul & Kansas City car No. 8920.

The Chicago, Burlington & Northern Railroad Co's defect card reads as follows: "one draft timber and two boards in end ceiling broken, old defects."

The Chicago, Burlington & Northern Railroad Co. refuses to pay the bill on the ground that the car was received from the Chicago, St. Paul & Kansas City Railway Co. at Galena Junction, where neither road has an inspector.

The car was moved by the Chicago, Burlington & Northern Railroad Co. over its line a distance of 27 miles, and delivered to the Chicago, Burlington & Quincy Railroad Co., which required a defect card for the defects mentioned. It further claims that it has the evidence of its own inspector that the defects were old, and that if damaged by that company the breakages would not have assumed the old appearance in the few hours the car remained on its line.

The Chicago, St. Paul & Kansas City Railway Co. claims that it had no knowledge, at the time the car was delivered, that the old defects claimed by the Chicago, Burlington & Northern existed. It claims also that any Railroad Co. which fails to protect itself by proper inspection becomes liable for defects in accepting cars, whether old or new.

Both parties agree to refer the case to the Arbitration Committee for decision.

#### DECISION.

The committee cannot settle questions of fact. The correspondence submitted shows that neither of the companies, parties to the dispute, has an inspector at Galena where the car in question was received.

The only testimony tending to show the condition of the car is given by the inspector of the Chicago, Burlington & Northern Railroad Co., at the point where the car was delivered by the latter company to the Chicago, Burlington & Quincy Railroad Co. This *ex parte* testimony cannot be considered by the committee.

The Rules of Interchange prescribe the means that must be taken by a railroad company to protect itself from loss on account of the improper condition of cars accepted from other companies. If it fails to take proper precautions, it becomes responsible for existing defects, whether old or new.

The committee is, therefore, of the opinion that the bill rendered by the Chicago, St. Paul & Kansas City Railway Co., upon the defect card issued by the Chicago, Burlington & Northern Railroad Co., is in accordance with the rules.

NOTE.—*Mr. Rhodes being interested in this case, was not a party to this decision.*

#### ARBITRATION CASE NO. 84, 1891.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS RAILWAY CO.

*versus*

ELGIN, JOLIET & EASTERN RAILWAY CO.

SPECIAL CARD OTHER THAN MASTER CAR-BUILDERS DEFECT CARD NO AUTHORITY FOR BILL.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co. rendered bill against the Elgin, Joliet & Eastern Railway Co. for repairs to Chicago, Milwaukee & St. Paul car No. 37860, carded by the latter company with a special red card, which is not a regular Master Car-Builder's defect card.

The Elgin, Joliet & Eastern Railway Co. refuses to pay the bill on the ground that the card is not a Master Car-Builder's defect card; that it was furnished merely to facilitate the movement of the freight.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co. does not dispute that the card is not a regular Master Car-Builders' defect card, but that according to Arbitration Case No. 14 the committee ruled an irregular defect card was valid.

Both parties agree to refer the case in dispute to the Arbitration Committee for decision.

#### DECISION.

The card accompanying the correspondence submitted to the committee is not a Master Car-Builders' defect card, and it, therefore, does not carry authority to render bill against the company issuing it.

The car should not have been accepted by the Cleveland, Cincinnati, Chicago & St. Louis Railway Co. with any other than a regular Master Car-Builders' defect card, in the absence of which, the defects are practically uncared, and the responsibility for the same is assumed by the company having accepted it.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co. bases its claim upon Arbitration Case No. 14, which, however, is not strictly a parallel case. In that instance the card was, in every respect, a Master Car-Builders' defect card, and was acknowledged as such by the company which issued it, while in the case under consideration, the defect card is different in form, and plainly states upon its face in print that it is not a Master Car-Builders' defect card, and the road issuing it further claims that it did not intend, at the time it applied the red card, to card the defects with a Master Car-Builders' defect card.

There is, therefore, a wide difference in the two cases.

It is the opinion of the committee that the Cleveland, Cincinnati, Chicago & St. Louis Railway Co. having accepted the car practically uncared, is responsible for the defects in that car, and that the bill rendered is not in accordance with the Rules of Interchange.

#### ARBITRATION CASE NO. 85, 1891.

NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY CO.

*versus*

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC RAILWAY CO.

#### AXLE BENT. NO EVIDENCE OF UNFAIR USAGE.

The Nashville, Chattanooga & St. Louis Railway Co. rendered bill against the Cincinnati, New Orleans & Texas Pacific Railway Co. for one second-hand axle placed under Cincinnati, New Orleans & Texas Pacific car No. 4129, on account of axle being bent.

The Cincinnati, New Orleans & Texas Pacific Railway Co. claims that it is not chargeable for the bent axle because it was bent while in service of the line rendering the bill, unless its dimensions were less than those prescribed for cars of that capacity under the Rules of Interchange. If of proper dimensions, it further claims, that it could not have been bent from fair usage. If bent by unfair usage, the road doing the damage is responsible for the same.

The Nashville, Chattanooga & St. Louis Railway Co. claims that the axle was bent under fair usage.

Both parties to the dispute agree to refer the case to the Arbitration Committee for decision.

DECISION.

There is nothing in the correspondence submitted to show that the axle under the car was damaged through unfair usage. In addition there is nothing to show what were the dimensions of the axle.

The committee cannot, of course, decide whether the damage was due to unfair usage or not. In deciding, it must be governed by the evidence submitted and Rule No. 9, where it is stated that when axles are changed, the company owning the car shall be charged for their removal, when bent or broken under fair usage.

In the absence of any evidence to the contrary, the committee must take it for granted that the car received no unfair usage while in the possession of the Nashville, Chattanooga & St. Louis Railway Co., and as the contrary is not shown, the committee is of the opinion that the bill as rendered is proper, and in accordance with the Rules of Interchange.

ARBITRATION CASE NO. 86, 1891.

KANSAS CITY, FORT SCOTT & MEMPHIS RAILROAD CO.

*versus*

ST. LOUIS, ARKANSAS & TEXAS RAILWAY CO.

TRUCKS RETURNED DEFECTIVE.

The St. Louis, Arkansas & Texas Railroad Co. destroyed Kansas City, Fort Scott & Memphis box car No. 1864, the trucks of which were returned to the owner. The trucks were sent to the Kansas City, Fort Scott & Memphis Railroad Co. at Springfield, Mo. Upon the arrival of the same at that point, it was found that one center plate, two column bolts, one truss casting and one wedge were broken.

The Kansas City, Fort Scott & Memphis Railroad Co. advised the company which returned the trucks of the defects, and asked authority to bill for the same.

The St. Louis, Arkansas & Texas Railway Co. claims that the trucks were put in good order when returned, and that it is not responsible for the damage. It further claims that the trucks were inspected by an employé of the Kansas City, Fort Scott & Memphis Railroad Co. at Jonesboro, at the time they were transferred to another car.

The Kansas City, Fort Scott & Memphis Railroad Co. denies that the trucks were inspected.

Both parties agree to refer the case in dispute to the Arbitration Committee for decision.

DECISION.

In accordance with the Rules of Interchange, the company destroying a car and returning the trucks must put them in good order or card them for all existing defects.

From the correspondence submitted, there is nothing to show, in a positive manner, that such was the case, as the statements of the parties to the dispute conflict with each other.

The rules do not require the inspection of material returned at any intermediate point.

The committee is therefore bound to accept the result of the inspection at the point to which the material was sent, namely, Springfield.

It must also accept the statement of the road to which the material was shipped, which, according to the correspondence submitted, shows that the trucks were in bad order.

In the absence of any further information the committee is of the opinion that the St. Louis, Arkansas & Texas Railway Co. should bear the expense of restoring the trucks returned by that company to their proper condition.

### ARBITRATION CASE No. 87, 1891.

BALTIMORE & OHIO RAILROAD CO.

*versus*

CHICAGO & WEST MICHIGAN RAILWAY CO.

DEFECT CARD FOUND ON WRECKED CAR. NO CHARGE TO BE MADE FOR ESTIMATED COST OF REPAIRS.

The Baltimore & Ohio Railroad Co., in April, 1890, rendered a bill of \$6.83 against the Chicago & West Michigan Railway Co. upon a defect card dated September 20, 1889, issued by the latter company, calling for one broken draft timber on Chicago & West Michigan car No. 689.

The car in question was destroyed on the line of the Baltimore & Ohio Railroad, and this defect card was found in the wreckage, and bill presented as mentioned above.

The Chicago & West Michigan Railway Co. objects to the bill on the ground of the repairs not having been actually made, stating that had they been made in accordance with Rule No. 6, the bill would have been accepted without protest, but under the circumstances the draft timber was just as good as new as long as it did its duty.

The Baltimore & Ohio Railroad Co. states that a defect card is authority to render a bill which all roads recognize, and that bill should be accepted even if rendered after the car was destroyed, for the reason that the car had the defects covered by the card, and as it paid for the value of the car when destroyed, credits should be received in that way for the defect.

Both parties agree to refer the matter to the Arbitration Committee for decision.

#### DECISION.

In accordance with Rule No. 6, repairs upon a defect card can only be made when necessary for the safe running of the car. It does not appear, from the correspondence submitted in this case, that repairs were necessary, as contemplated in the Rule, before the car was wrecked. There seems to be no ground, therefore, upon which the Baltimore & Ohio Railroad Co. could base a bill against the Chicago & West Michigan Railway Co., as the former did not actually make the repairs. This car was evidently safe and serviceable when accepted, and might have remained so for an indefinite period if it had not been wrecked, which was no fault of the owner. The defect card is an acknowledgment of responsibility for defective parts on the

part of the railroad giving the card, but it must, according to Rule No. 6, be used as authority to make bill for repairs only when such repairs are necessary to the safe running of the car, and such repairs have actually been made to secure that end. Another property of the defect card, which is usually overlooked, is, it not only secures the acceptance of a defective car without risk to the roads receiving it, of having to assume the cost of making necessary repairs in case of final breakage, but guarantees its acceptance by the road having furnished the card, in the same defective condition.

Rule No. 6 contemplates the fulfillment of this latter condition, and provides distinctly that no repairs shall be made except under certain circumstances, which in this case did not exist. It is further claimed by the Baltimore & Ohio Railroad Co. that in settling for this car it should not be made to pay for defective parts. In settling for a car under the Master Car-Builders' rules allowance is made for depreciation, which may be taken to cover defective or partly worn parts yet fit for service.

A fair construction of Rule No. 6 cannot be made to cover the claim of the Baltimore & Ohio Railroad Co. in this case, and it is the opinion of the committee that the bill under the rule cited is not proper.

JNO. W. CLOUD,  
*Secretary.*



# CODE OF RULES

GOVERNING THE CONDITION OF, AND REPAIRS TO  
FREIGHT CARS FOR THE INTERCHANGE  
OF TRAFFIC,

ADOPTED BY THE

## MASTER CAR-BUILDERS' ASSOCIATION.

REVISED AT CAPE MAY, N. J., JUNE, 1891.

### GENERAL.

RULE 1. Each Railway Company shall give to foreign cars, while on its line, the same care as to oiling and packing that it gives to its own cars.

### DELIVERING AND RECEIVING CARS AT INTERCHANGE POINTS.

RULE 2. Cars must be delivered in good running order and returned in as good general condition as when received.

RULE 3. Cars may be refused for any of the following defects:

### DEFECTS OF WHEELS.

(a) Shelled out; wheels with defective treads on account of pieces shelling out, leaving flat spots deepest at the edge, with a raised center. Wheels must not be condemned for this cause, unless the spots are over  $2\frac{1}{2}$  inches, or are so numerous as to endanger the safety of the wheel.

(b) Seams 1 inch long or over at a distance of  $\frac{1}{2}$  inch or less from the throat of the flange, or seams 3 or more inches long on any other point of the tread.

(c) Worn through chill; when the flat spot caused by wear exceeds  $2\frac{1}{2}$  inches in length. Care must be taken to distinguish this defect from flat spots caused by sliding wheels.

(d) Worn flange; flanges 1 inch thick or less, or having flat, vertical surfaces extending more than 1 inch from tread. (See Figs. 3 and 4.)

(e) Tread worn hollow; if the tread is worn sufficiently hollow to render the flange or rim liable to breakage.

(f) Flat sliding; if the flat spots caused by sliding exceed  $2\frac{1}{2}$  inches in length. Care should be taken to distinguish this defect from *worn through chill*.

(g) Burst; if the wheel is cracked from the wheel fit, outward, by pressure from the axle.

Care of  
foreign  
cars.

Condition  
of cars  
delivered.  
Defects for  
which cars  
may be  
refused.

(h) Broken or chipped flange; if the piece broken off exceeds  $1\frac{1}{2}$  inches in length and  $\frac{1}{2}$  inch in width, or if it extends  $\frac{1}{8}$  inch past center of flange.

(i) Broken or chipped rim; if the tread, measured from the flange at a point  $\frac{3}{8}$  inch above tread, is less than  $3\frac{3}{4}$  inches in width. (See Fig. 5.)

(j) Cracked tread.

(k) Cracked plate.

(l) Cracked brackets.

(m) Broken in pieces.

NOTE.—The determination of flat spots, sharp flanges, thin flanges and chipped treads shall be made by a gauge of the following form :

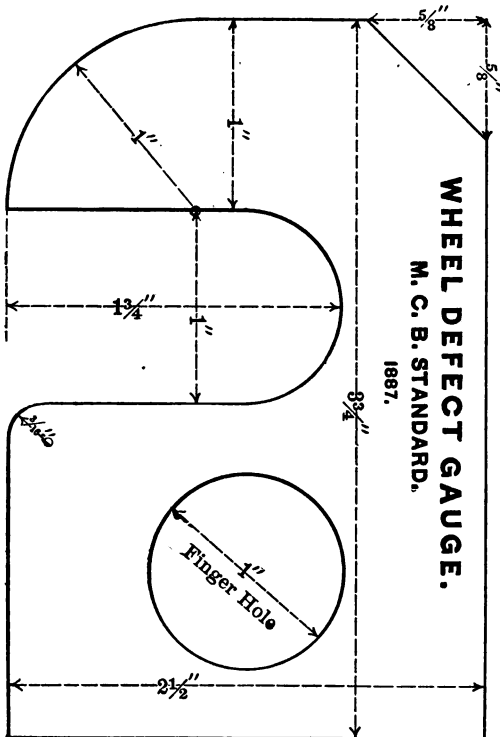
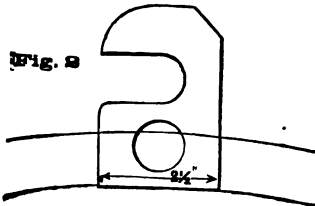
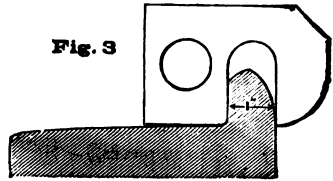


FIG. 1.

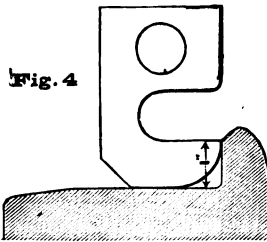
The following engravings of the wheel defect gauge, made on a reduced scale, show the method of using it:



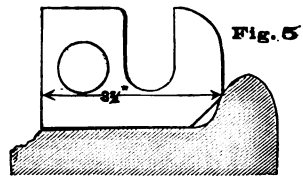
METHOD OF GAUGING FLAT SPOTS.  
SEE (a) RULE 3.



METHOD OF GAUGING THIN FLANGES.  
SEE (d), RULE 3.



METHOD OF GAUGING WORN FLANGES.  
SEE (d), RULE 3.



METHOD OF GAUGING CHIPPED RIMS.  
SEE (f), RULE 3.

#### DEFECTS OF AXLES.

- (n) Axle bent or broken.
- (o) Journals cut.
- (p) Axles less than the following limits:

Capacity of Car.	Journal.	Wheel Seat.	Center.
60,000	3 3/4 in.	5 in.	4 3/8 in.
50,000	3 1/2 "	4 7/8 "	4 1/8 "
40,000	3 1/4 "	4 3/4 "	3 7/8 "
30,000	3 "		
20,000	2 3/4 "		

#### DEFECTS OF MOUNTING WHEELS ON AXLES.

- (q) Loose wheel.
- (r) Out of gauge, or wheels that measure less than 4 feet 5 inches or more than 4 feet 5 3/4 inches between flanges, or less than 5 feet 4 inches over treads. (See Fig. 6).

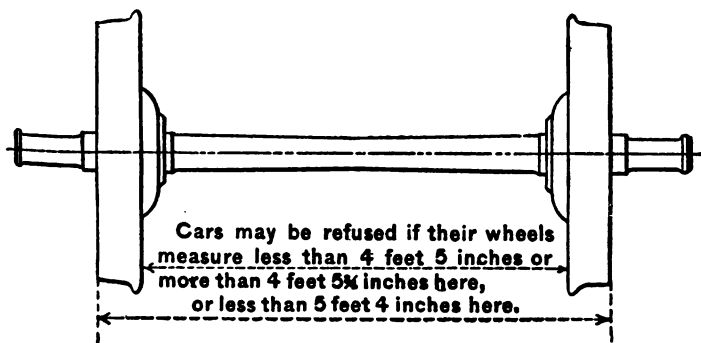


FIG. 6.

## OTHER DEFECTS.

## (i) Brakes in bad order.

*Brakes shall be considered in bad order unless the following twenty-three conditions are complied with:*

1. Brake wheel secured to shaft with properly fitted nut.
2. Bottom of brake shaft secured by a nut or key or some other suitable device to prevent shaft lifting out of position.
3. Brake chain secured to shaft with bolt, and bolt properly secured by nut or by rivet.
4. Upper brake-shaft bearing properly secured to the end and top of box and stock cars by either two bolts or one bolt and one lag screw not less than one-half inch in diameter.
5. Brake ratchet wheel sound and well secured to shaft.
6. The brake pawl, when attached to brake step or to upper brake-shaft bearing, secured with bolt and nut. When applied to roof of car, secured with either bolt or lag screw. The pawl sound and point effective.
7. Brake step secured by bolts in each of the two brackets. The brackets secured to car by either four bolts or four lag screws. The brake step sound at outer edges through both bolt holes.
8. Brake-shaft step secured to car by either two or four bolts or lag screws. When the drawbar carry irons form the step, two bolts passing through draft timbers should be effective.
9. Brake hangers secured to car body or trucks with full complement of bolts and nuts the hanger is drilled to receive, and also secured to brake head and beam in like manner. Brake beams, levers and attachments not less than 2½ inches from the top of the rail.
10. Brake heads in a condition to hold the shoes in place when applied.
11. Brake shoes secured to brake head by either key bolt, bolt and nut, or key, as required by form of head.
12. Brake shoes ¾ inch thick or more at center.
13. Brake wheels must be sound.
14. Brake beams sound, and when hung to body provided with guide irons.
15. Brake beam fulcrums (cast iron) sound, and secured to brake beam by two bolts. Wrought-iron fulcrum firmly secured.
16. Brake connections properly secured to brake beam and to brake levers with key-bolt and key.
17. If the car has air brakes, the cylinder must have been cleaned and the triple valve cleaned and oiled within twelve months, and the date of the last cleaning and oiling marked on the brake cylinder.

18. If the car has air brakes, the cylinder must have been oiled within three months, and the date of the last oiling be marked on the cylinder.

19. If the car has air brakes, the brake-shoe slack must be so adjusted that under the full application of the brakes, the piston travels not less than four inches nor more than eight inches.

20. If the car has air brakes, the brakes must apply and release promptly with proper handling by the engineer's valve.

21. Triple valves and auxiliary reservoirs must be free from water.

22. Air pipes and all connections thereto must be free from leaks, and the pipes properly secured to the car body so that injury shall not occur to the apparatus nor leaks be produced by shaking and vibration of the pipe.

23. If the car has air brakes, it must have two hose and couplings, in good order, which must be properly secured in the dummy couplings when not coupled to other cars.

(t) Steps, ladders or running boards in bad order or insecurely fastened.

*Steps, ladders or running boards shall be considered in bad order unless the following two conditions are complied with :*

1. Running boards sound and securely fastened to roof of car.

2. Roof grab-irons, ladder handles, sill steps, ladder sides and rounds all sound and securely fastened to car body by either bolts or lag screws.

(u) Drawbars and attachments in bad order.

*Drawbars and attachments shall be considered in bad order unless the following nine conditions are complied with :*

1. Master Car-Builders' drawbars with such minor defects only as do not impair their efficiency and safety.

2. Where wrought-iron drawbars are used they must not be broken off outside of tenons, nor broken nor cracked in the opening of face-plate, nor in the angles of the pocket, nor through rivet holes, nor must the filling be lost. Where cast-iron drawbars are used, they must not be broken nor cracked through pin hole nor back of head, nor must bolts or rivets be missing where wrought pocket is used.

3. Drawbar stem, rod and bolt must be sound and secured back of drawbar follower plate by a nut or flat key. This to be secured by either a ring or spring cotter.

4. Drawbar stops must be sound, with all bolts and nuts in proper place.

5. Drawbar keys and followers must be sound and properly secured to draft timbers.

6. Draft springs composed of two or more coils must not have more broken parts than one inside coil.

7. Drawbar carrier irons should have two effective bolts on each side.

8. Draw-timbers must not be more than  $\frac{3}{8}$ -in. down, and this only where bolts are effective.

9. Dead blocks, wood sound, castings free from cracks through bolt holes and properly secured in place with bolts or rods.

(v) Center sills or draft timbers spliced.

(w) Intermediate or outside sill recently spliced in a manner not prescribed by the rules.

(x) Leaky roofs on merchandise or grain cars.

(y-1) Cars with doors missing ; or in condition which will improperly protect the lading, or with door shoes worn or loose so as to allow the door to swing outwardly.

(y-2) Cars with four-hole center plates and long center pins through bolster must have two effective bolts diagonally opposite.

(y-3) Cars with four-hole center plates and short center pins which rest in upper plate must have three effective bolts.

(y-4) Cars with two-hole center plates must have two bolts effective.

(v-5) Four-hole center plates must not have two adjacent corners of plates broken through bolt holes.

(y-6) Two-hole center plates must be unbroken.

(z) Special or general defects of bodies or trucks, which render cars unsafe to run.

RULE 4. A car with defects which do not render it unsafe to run or unsafe to trainmen must be accepted, but in such cases the company to which the car is offered may require that a defect card shall be securely attached to the car with four tacks, preferably on the outside face of the intermediate sill between the cross tie-timbers.

RULE 5. Defect cards shall be  $3\frac{1}{2}$  inches by 8 inches, and of the form shown below. They shall be printed on both sides and shall be filled in on both sides with ink or indelible pencil. The card must plainly specify in full each item for which charges are authorized.

(Name of Road.)		Send bill on this card to
Car No. ....	Date .....	
Initial .....	Line .....	
Will be received at any point on this company's line, with the following defects :		
.....		
<p><b>NOTE.</b> Fill in defects on both sides with ink or indelible pencil. Attach this card with four tacks on outside face of intermediate sill, between cross tie timbers.</p>	.....	
	.....	
	.....	
	.....	
	Inspector at .....	

Defect cards, use of.

Defect cards, form of.

RULE 6. Any company finding a car with defect card attached may make the repairs noted by the card, provided such repairs are necessary for the safe running of the car, and render bill for same to the company attaching card. The card to accompany the bill as voucher for the work done.

Making repairs noted by defect cards.

#### DEFECTS FOR WHICH OWNERS ARE RESPONSIBLE.

RULE 7. Locks and grain doors on cars are at owner's risk.

RULE 8. Car owners shall be chargeable with the repairs of their own cars when such repairs are necessitated by :

(a) Roofs lost from cars on account of decayed condition or faulty construction, and owners notified before the repairs are made.

(b) Brake shoes worn out.

(c) Journal bearings worn out, except that when wheels or axles are changed and are not chargeable to the car owner under Rule 9, the renewal of bearings necessary shall not be charged to the owner.

Locks and grain doors.  
Roofs, brake shoes, journal bearings, bolsters, etc.

Wheels and  
axles.

(d) Truck or body bolsters, or spring planks, or truck springs broken, provided that the car was not derailed or wrecked.

(e) Wheels and axles worn out as provided in Rule 9.

RULE 9. When wheels or axles are renewed, they shall be treated as follows :

#### WHEELS.

Wheels  
charged to  
owners.

Wheels shall be charged to the company owning the car, if the cause of removal is :

- (a) Shelled out spots.
- (b) Seams.
- (c) Worn through chill.
- (d') Worn flange.
- (e) Tread worn hollow.
- (f) Burst.
- (g) Broken flange, if the breakage is caused by seams worn through chill or worn flange.
- (h) Broken rim, if caused by rim being hollow.
- (i) Cracked tread, if caused by being worn through chill.
- (j) Cracked plate.
- (k) Cracked brackets.
- (l) Broke in pieces.
- (m) Loose.
- (n) Out of gauge.

Exceptions

Wheels shall not be charged to the company owning the car if the cause of removal is :

- (a) Flat sliding.
- (b) Chipped flange.
- (c) Broken flange, if the breakage is not caused by seams, worn through chill or worn flange.
- (d) Broken or chipped rim, not caused by rim being hollow.
- (e) Breakage of any kind caused by derailment.

#### AXLES.

Axles  
charged to  
owners.

Axles shall be charged to the company owning the car if the cause of removal is :

- (a) Wheels having defects which are chargeable to the owners.
- (b) Axles bent or broken, or with collars worn off under fair usage.
- (c) Axles less than the prescribed limits.

Exceptions.

Axles shall not be charged to the company owning the car if the cause of removal is :

- (a) Wheels having defects for which the owner is not chargeable.
- (b) Axles damaged by derailment or wreck.
- (c) Cut journals.

When axles are renewed, the axles applied shall be stamped or prick-punched near the center with the initials of the road doing the work and the date of renewal.

**RULE 10.** In the case of cars belonging to private parties or corporations other than railway companies, or that are not cared for or controlled by a railroad company, the repairs or renewals of all parts that fail under fair usage, or on account of ordinary wear and tear, or bad or inferior design, may be made by railroad companies, and shall be paid for by the owners.

Individual  
cars,  
repairs to.

**RULE 11.** A car unsafe to load on account of general worn out condition, due to age or decay, shall be reported to its owner, who must be advised of all existing defects. If the owner elects to have it sent home, he shall furnish two home cards, noting upon them existing defects and the route over which the car is to be returned to its owner. If the route coincides with that over which the car passed to the point where it became unserviceable, no liability shall be incurred as between the owner and the road handling the car, either for freight charges in handling the car or for car service during this movement.

Home cards,  
use of.

Such cards shall be attached to each side of the body of the car. They shall be  $3\frac{1}{2}$  by 8 inches, and of the form shown below. They shall be printed on both sides, and shall be filled in on both sides with ink or indelible pencil.

FROM	
.....	R. R.
TO	
.....	R. R.
VIA	
.....	
.....	
To be shipped for .....	
.....	
.....	
.....	
(Head of Car Department.)	

In case of private line cars, the car shall be regularly billed home, and the owner notified.



Wheels  
and axles,  
prices for.

# BILLS FOR WHEEL AND AXLE WORK.

**RULE 12.** Bills rendered for wheels and axles shall be in accordance with the following schedule of prices for material, with the proper debits and credits :

	NEW.	SECOND-HAND.	SCRAP.
One 36-inch wheel .....	\$13 00	\$9 00	\$5 00
One 33-inch wheel .....	10 00	7 00	4 50
One 30-inch wheel (or less) .....	9 00	6 00	4 00
One axle .....	10 00	7 00	4 00

and with an additional charge of \$1.50 for all labor for each pair of wheels and axle removed from the truck. If new wheels and axles are substituted for second-hand wheels and axles, proper charges and credit shall be allowed, although such substitution be made on account of only one loose or defective wheel or a defective axle, with the following exception: in case the owner of a car removes wheels on account of defective axle, the road responsible for damaging the axles shall not be charged for any difference in value between the wheels used and those removed.

RULE 13. Bills for wheel and axle work shall be in the following form :

**Wheels and axles, form of bills.**

[illegible]

Bills for wheel and axle work must make specific mention of each axle and wheel removed or applied.

Bills which do not embody all the information called for by the headings of the columns may be declined until made to conform to the requirements of the rule. If no marks are found on wheels or axles removed, a notation to that effect must be made on face of bill.

**RULE 14.** In noting on bills the cause of removal of wheels and axles, the terms used in Rule 3, Sections *a* to *r* shall be used, and the dimensions of the defect or variation from the prescribed limits should be carefully specified.

**Wheels and axles, terms to be used in rendering bills.**

## REPAIRING AND SETTLING FOR FOREIGN CARS.

Foreign cars  
damaged,  
repairing.

RULE 15. Foreign cars if damaged shall be promptly repaired by the company causing the damage; such repairs shall be thoroughly made, and the work shall conform in detail to the original construction and with the same quality of material originally used, except as hereinafter provided; new standard parts may, however, be used if agreed to.

RULE 16. In repairing damaged cars, M. C. B. Standards may be used when of design and dimensions that do not mar or impair the strength of the cars, in lieu of the parts forming its original construction.

Precautions  
in mounting  
wheels.

RULE 17. Wheels on the same axle must be of the same circumference.

New wheels must not be mated with second-hand wheels.

Prick-punching or shimming the wheel fit must not be allowed.

Wheels applied must be marked on the inside with the date, the initials of the road doing the work and the place where the work is done.

The wheel seats of foreign axles must not be reduced more than  $\frac{1}{8}$  inch to fit wheels.

Spliced sills.

RULE 18. All sills other than center sills to which draw timbers are attached, may be spliced once. When the sills are less than 12 inches in width the plan shown in Fig. 7 is to be followed:

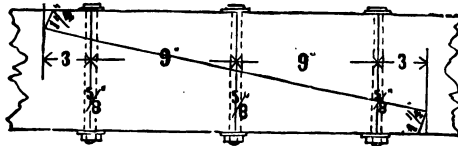


FIG. 7.

When the sills are 12 inches or more in width, the plan shown in Fig. 8 is to be followed.

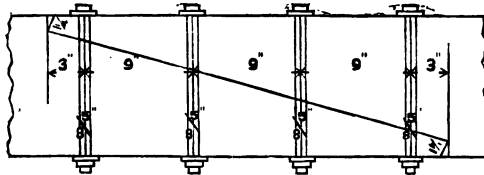


FIG. 8.

The splice may be located either side of body bolster, but the nearest point of any splice must not be within 12 inches of same. The splicing of two adjacent sills at the same end of the car will not be allowed.

Repairing  
cars with  
wrong  
material.

RULE 19. Any company repairing foreign cars with wrong material, and not in compliance with Rules 15, 16, 17 and 18, shall be liable for the cost of changing such car to the original standard, or to the requirements of Rule 18.

RULE 20. A company using wrong materials in such repairs, shall place upon the car, at the time and place that the work is done, a defect card, which defect card shall state the wrong material used and shall pass the car back to the owning road.

RULE 21. The company on whose line the bodies or trucks are destroyed, shall report the fact to the owner not later than 30 days after their destruction, and shall have its option whether to rebuild or settle for the same.

RULE 22. If the company on whose lines the car is destroyed elects to rebuild, either body or trucks, or both, the original plan of construction must be followed, and the original kind and qualities of materials used. The rebuilding must be completed within 60 days from the original date of damage or destruction. In such cases no allowance shall be made for betterments.

RULE 23. The settlement prices of new eight-wheel cars shall be as follows, with an addition of \$50 for each car equipped with air brakes. The road destroying a car with air brakes may elect to return the air-brake apparatus including piping and all attachments complete and in good condition.

#### BODIES.

##### *Wood or Iron.*

Box car, eight-wheel, 34 feet long or over .....	\$ 300.00
Box car, eight-wheel, 32 feet long or over, but under 34 feet long .....	275.00
Box car, eight-wheel, under 32 feet long .....	240.00
Stock car, eight-wheel, 32 feet long and over .....	275.00
Stock car, eight-wheel, under 32 feet long .....	240.00
Stock cars with feeding attachments, add to above figures per car .....	25.00
Stock cars with watering attachments, add to above figures, per car .....	25.00
Gondola car, eight-wheel, drop bottom, 20 tons or over .....	220.00
Gondola car, eight-wheel, drop bottom, 15 tons or less .....	180.00
Gondola car, eight-wheel, hopper bottom, 25 tons or over .....	275.00
Gondola car, eight-wheel, hopper bottom, 20 tons or over .....	240.00
Gondola car, eight-wheel, hopper bottom, 15 tons or over .....	200.00
Gondola car, eight-wheel, plain, 32 feet long or over .....	150.00
Gondola car, eight-wheel, plain, under 32 feet long .....	125.00
Flat car, eight-wheel, plain, 32 feet long or over .....	125.00
Flat car, eight-wheel, plain, under 32 feet long .....	100.00

When cars have trucks with journals 4 inches or over in diameter when new, \$25.00 per car shall be added to the figures as given above for the values of car bodies.

#### TRUCKS.

With wood transoms, one pair .....	\$ 200.00
With metal transoms, one pair .....	250.00

Repairing cars with wrong materials, defect cards.

Foreign cars destroyed, repairing, etc.

Foreign cars, rebuilding, manner of doing work.

Foreign cars destroyed, basis of settlement.

## FOUR-WHEEL CARS.

Coal car, ordinary, complete.....	\$ 200.00
Box car, complete .....	230.00
Gondola car, drop-bottom, complete .....	300.00

Depreciation due to age shall be estimated at six per cent per annum upon the yearly depreciated value of the bodies and trucks only, provided, however, that allowances for depreciation shall in no case exceed sixty per cent of the value new. The amount, \$50, for air brakes shall not be subject to any depreciation.

Refrigerator cars and other freight cars designed for special purposes, not specially referred to above, shall be settled for at the present cost price, as may be agreed to by the parties in interest, but the deduction for depreciation due to age shall be on the same basis as for regular freight equipment cars.

RULE 24. If only the body of the car is destroyed, and the company destroying it elects to return the trucks, they shall be put in good order, or accompanied by a defect card, and delivered free of freight or other charges to the nearest point on the road of the company owning the car, and the number, line and class of car destroyed shall be stenciled or painted on each truck so returned.

## FURNISHING MATERIAL AND BILLING WORK DONE.

RULE 25. Companies shall promptly furnish to each other, upon requisition, and forward free over their own road, material for repairs of cars injured upon foreign lines. Requisition for such material shall state that it is for repairs of cars, and shall give the number and lettering of such cars and pattern numbers of castings required when possible.

RULE 26. Bills for work done on defect cards or for material furnished on requisition shall be on the basis of the following charges and credits :

MATERIAL.	CHARGE.	CREDIT.
Cast Iron.....per lb.	2c.	$\frac{3}{4}$ c.
Malleable Iron....."	5	$\frac{1}{2}$
Bolts, Nuts and Forgings....."	4	1
Steel Castings....."	7	$\frac{3}{4}$
Spring Steel....."	5	$\frac{3}{4}$
Brass Journal Bearings....."	16	9
Phosphor-Bronze Bearings....."	18	10
Pine (Yellow, White or Norway).....per ft.	3	.....
Oak....."	3	.....
Labor.....per hr.	20	.....
1 Box or Stock Car, Side Door.....applied.	\$5.00	.....
1 Box or Stock Car, End Door....."	3.00	.....
Chain.....per lb.	5	.....

Manufactured articles not included in above list, at current market prices without freight charges.

No percentage to be added for either material or labor.

## MISCELLANEOUS.

RULE 27. In rendering bills, cars shall be treated as belonging to railway companies whose name or initials they bear, except in case of line

Foreign cars  
destroyed,  
returning  
trucks.

Furnishing  
materials.

Bills for  
work done,  
basis.

Leased cars,  
treatment of  
in bills.

cars, where the equipment list of the general officers of the line designates a party to make settlement.

RULE 28. For the mutual advantage of railway companies interested, the settlement for a car owned or controlled by a railway company, when damaged or destroyed upon a private track, shall be assumed by the railway company delivering the car upon such track.

RULE 29. Any railway company may become a party to this code of rules by giving notice through one of its general officers to the Secretary of the Master Car-Builders' Association.

Any railway company which is a party to this code of rules shall be bound by same through its successive revisions, until one of its general officers files with the Secretary of the Master Car-Builders' Association its notification of withdrawal.

Acceptance or rejection of this code of rules must be as a whole, and no exception to an individual rule or rules shall be valid.

RULE 30.—To better settle all disputes arising under the rules, and to facilitate the revision of the same at the annual meetings, a committee of five representative members (three to be a quorum) shall be appointed annually, to be known as the Committee on Revision of Rules, and settlement of disputes arising under the same, who shall ask for (by circular) suggestions of changes, amendments and additions to these rules, and who shall revise and formulate such replies as they may receive, before presentation at the regular annual meeting.

In case of any dispute or question arising under the Rules between the subscribers to said Rules, the same may be submitted to this committee through the Secretary, who shall, before referring the case to the committee, notify both parties to the dispute to submit their reasons in support of their claims to the committee in order to enable it to decide intelligently. Should one of the parties refuse or fail to furnish the necessary information, the committee shall use its judgment as to whether, with the information furnished, it can properly give its opinion. The decisions of the committee shall be final and binding upon the parties concerned. This committee shall report its decisions to the Association, and their report shall be incorporated in the annual report of proceedings of the Association.

RULE 31. In the revision of these Rules by the Association, each railway company shall be entitled to one vote for each 1,000 eight-wheel cars (or major part thereof) owned or in process of purchase. Two four-wheel cars shall count as one eight-wheel car. A two-thirds vote shall be necessary for adoption.

RULE 32. This Code of Rules shall take effect September 1, 1891 and shall be introduced for discussion and revision at one session of the Master Car-Builders' Association Convention each year.

Cars destroyed on private sidings, settlement for.

Conditions of participation in Code of Rules.

Arbitration Committee for revision of rules and settlement of disputes.

Rules, revision of, basis of voting.

Rules in effect Sep. 1, 1891.

## LIST OF RAILROAD COMPANIES

WHICH HAVE ADOPTED THE CODE OF RULES GOVERNING THE  
CONDITION OF, AND REPAIRS TO FREIGHT CARS FOR THE  
INTERCHANGE OF TRAFFIC.

*The following is a complete list of the railroad companies which have given notice of the adoption of the above Code of Rules.*

*Other railroad companies which adopt this Code of Rules should notify the Secretary in accordance with the Rules so that the names of such companies may be included in the list thereafter. Notice should be given of all changes in the names of companies in this list.*

Alabama Great Southern.	Chicago, St. Louis & Western.
Alabama & Vicksburg.	Chicago, St. Paul, Minneapolis & Omaha.
Allegheny Valley.	Chicago & Alton.
Atchison, Topeka & Santa Fé.	Chicago & Eastern Illinois.
Atlanta & West Point.	Chicago & Grand Trunk.
Baltimore & Ohio.	Chicago & Iowa.
Baltimore & Ohio Southwestern.	Chicago & Kenosha.
Beech Creek.	Chicago & North-Western.
Boston & Albany.	Chicago & South-Eastern.
Boston & Lowell.	Chicago & West Michigan.
Boston & Maine.	Chicago & Western Indiana and Belt
Boston, Hoosac Tunnel & Western.	Railway.
Buffalo, Rochester & Pittsburgh.	Cincinnati, Hamilton & Dayton.
Burlington, Cedar Rapids & Northern.	Cincinnati, Selma & Mobile.
Burlington & Missouri River in Nebraska.	Cincinnati, New Orleans & Texas
Cairo, Vincennes & Chicago.	Pacific.
Central Railroad of New Jersey.	Cleveland, Cincinnati, Chicago & St.
Calumet & Blue Island.	Louis.
Canada Southern.	Cleveland, Mt. Vernon & Delaware.
Canadian Pacific.	Cleveland & Marietta.
Cape Girardeau Southwestern.	Cleveland & Canton.
Central Iowa.	Colorado Midland.
Central Vermont.	Columbus, Hocking Valley & Toledo.
Champaign & Havana.	Connecticut River.
Chesapeake, Ohio & Southwestern.	Cornwall & Lebanon.
Chesapeake & Ohio.	Cumberland Valley.
Chicago, Burlington & Kansas City.	Delaware, Lackawanna & Western.
Chicago, Burlington & Northern.	Delaware & Hudson Canal Co.
Chicago, Burlington & Quincy.	Denver & Rio Grande.
Chicago, Milwaukee & St. Paul.	Detroit, Grand Haven & Milwaukee.
Chicago, Peoria & St. Louis.	Detroit, Lansing & Northern.
Chicago, Rock Island & Pacific.	Des Moines & Fort Dodge.
Chicago, St. Louis & Pittsburgh.	Des Moines & Northern.
	Duluth & Iron Range.

- Duluth, South Shore & Atlantic.  
 Durham & Northern.  
 East Tennessee, Virginia & Georgia.  
 Fall Brook Coal Co.  
 Fitchburg.  
 Flint & Pere Marquette.  
 Florida Central & Peninsular.  
 Geneva, Ithaca & Sayre.  
 Georgia.  
 Georgia, Carolina & Northern.  
 Grand Trunk & Great Western Division.  
 Grand Rapids & Indiana.  
 Gulf, Colorado & Santa Fé.  
 Hannibal & St. Joseph.  
 Hartford & Connecticut Western.  
 Housatonic.  
 Houston & Texas Central.  
 Huntingdon & Broad Top Mountain.  
 Illinois Central.  
 Indiana, Bloomington & Western.  
 Indianapolis, Decatur & Western.  
 Intercolonial of Canada.  
 International & Great Northern.  
 Jacksonville, Tampa & Key West.  
 Joliet & Blue Island.  
 Kansas City Belt.  
 Kansas City, Fort Scott & Gulf.  
 Kansas City, St. Joseph & Council Bluffs.  
 Kanawha & Ohio.  
 Keokuk & Western.  
 Lake Champlain & Moriah.  
 Lake Erie & Western.  
 Lake Shore & Michigan Southern.  
 Lehigh Valley.  
 Litchfield, Carrollton & Western.  
 Louisville, Evansville & St. Louis.  
 Louisville, New Albany & Chicago.  
 Louisville & Nashville.  
 Louisville, New Orleans & Texas.  
 Louisville & St. Louis.  
 Maine Central.  
 Mason City & Ft. Dodge.  
 Mexican Central.  
 Michigan Central.  
 Milwaukee, Bay View & Chicago.  
 Milwaukee, Lake Shore & Western.  
 Missouri Pacific.  
 Minneapolis, St. Paul & Sault Ste. Marie.  
 Minneapolis & St. Louis.  
 Minnesota & Northwestern.  
 Missouri, Kansas & Texas.  
 Montana Union.  
 Mobile & Ohio.  
 Nashville, Chattanooga & St. Louis.  
 New Orleans & Northeastern.  
 New York Central & Hudson River.  
 New York & Northern.  
 New York, Chicago & St. Louis.  
 New York, Lake Erie & Western.  
 New York, New Haven & Hartford.  
 New York, Ontario & Western.  
 New York, Pennsylvania & Ohio.  
 New York, Providence & Boston.  
 New York, West Shore & Buffalo.  
 New York & New England.  
 New York, Susquehanna & Western.  
 Newport News & Mississippi Valley.  
 Norfolk Southern.  
 Norfolk & Western.  
 Northern Pacific.  
 Old Colony.  
 Ohio & Mississippi.  
 Ogdensburg & Lake Champlain.  
 Pennsylvania Company.  
 Pennsylvania Railroad.  
 Pennsylvania, Poughkeepsie & Boston.  
 Peoria, Decatur & Evansville.  
 Petersburg.  
 Philadelphia & Reading.  
 Pittsburgh, Chartiers & Youghiogeny.  
 Pittsburgh, Cincinnati, Chicago & St. Louis.  
 Pittsburgh & Lake Erie.  
 Pittsburgh & Western.  
 Providence & Worcester.  
 Raleigh & Augusta Air Line.  
 Raleigh & Gaston.  
 Richmond, Fredericksburg & Potomac.  
 Richmond & Danville.  
 Rome, Watertown & Ogdensburg.  
 Roanoke & Tar River.  
 St. Paul & Duluth.



St. Joseph & Grand Island.  
 Saginaw Valley & St. Louis.  
 Scioto Valley.  
 Seaboard & Roanoke.  
 Shenandoah Valley.  
 Shenango & Allegheny.  
 Sioux City & Northern.  
 South Atlantic & Ohio.  
 South Carolina.  
 Southern Central.  
 Southern Pacific : Pacific System.  
 St. Louis, Arkansas & Texas.  
 St. Louis, Keokuk & Northwestern.  
 St. Louis & San Francisco.  
 Staten Island Rapid Transit.  
 Terre Haute & Indianapolis.  
 Texas Pacific.  
 Toledo, Cincinnati & St. Louis.

Toledo, St. Louis & Kansas City.  
 Toledo & Ohio Central Extension.  
 Toronto, Gray & Bruce.  
 Troy & Boston.  
 Union Pacific.  
 Vicksburg & Meriden.  
 Vicksburg, Shreveport & Pacific.  
 Virginia Midland.  
 Wabash Ry.  
 Western Maryland.  
 Western Railway of Alabama.  
 Western New York & Pennsylvania.  
 West Jersey.  
 Wilmington, Columbia & Augusta.  
 Wilmington & Northern.  
 Wilmington & Weldon.  
 Wisconsin Central.  
 Zanesville & Ohio' River.

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## APPENDIX.

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### CODE OF RULES GOVERNING THE CONDITION OF, AND REPAIRS TO, PASSENGER EQUIPMENT CARS IN INTERCHANGE.

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1. Each railway company shall give to foreign cars, while on its line, the same care and attention that it gives its own cars, except in case of cars on which work is done under special agreement existing between the company owning the cars and the road operating the same.
2. Cars must be delivered in good running order, and returned in as good general condition as when received.
3. The receiving road is authorized to make such alterations and repairs as are necessary for the safe movement of cars over its line, and must immediately notify the delivering road of all such alterations and repairs, upon receipt of which notification the delivering road shall furnish proper authority to render bill for such alterations and repairs.
4. Authority must be furnished for the replacement of wheels and axles if in the following condition :

## WHEELS.

- (a) Loose wheels.
- (b) Variation from gauge as indicated by Fig. 1. (See page 33.)

## WHEELS, CAST-IRON.

- (a) Shelled out, with treads defective on account of circular pieces shelling out, leaving round, flat spots, deepest at the edges, with raised centers, if  $1\frac{1}{4}$  inches or more in diameter.
- (b) Tread worn hollow; if tread is worn sufficiently hollow to render flange or rim liable to breakage.
- (c) Worn flange; flanges having flat, vertical surfaces extending more than  $\frac{3}{4}$  inch from tread.

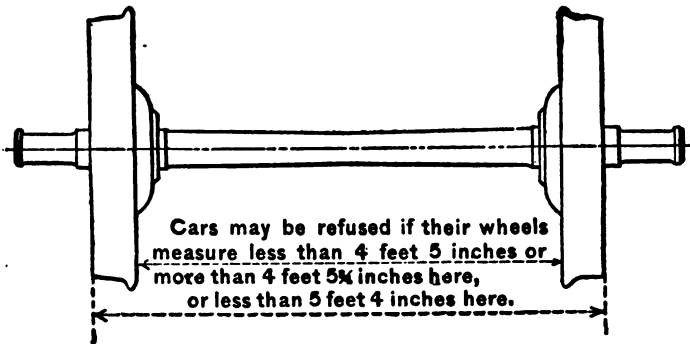


FIG. 1.

- (d) Flat spots; if flat spots caused by sliding exceed  $1\frac{1}{4}$  inches in length.
- (e) Burst; if wheels are cracked from the wheel-fit outward by pressure from the axle.
- (f) Flanges, rim, tread, plate or brackets, either cracked, chipped or broken in any manner.

## WHEELS, STEEL-TIRED.

- (a) Loose, broken or cracked hubs, plates, bolts, retaining ring or tire.
- (b) Worn flange or tire; with flanges less than  $\frac{3}{4}$  inch thick, or having flat, vertical surfaces extending more than  $\frac{3}{4}$  inch from tread, or with tire less than 1 inch in thickness.
- (c) Flat spots; if flat spots, caused by sliding, exceed  $1\frac{1}{4}$  inches in length.

## AXLES.

Axles bent or broken, or having journals cut or less than  $3\frac{1}{2}$  inches in diameter.

5. Brakes must be in perfect working order (adjustment based on seventy pounds as the initial pressure), with a piston travel of not less than 6 inches, nor more than 10 inches.

[illegible]

7. Bills rendered for labor and material furnished shall be in accordance with the following prices, with the proper debits and credits:

	NEW.	2D HAND.	SCRAP.
1 36-inch Cast Wheel.....	\$14.00	\$10.00	\$5.50
1 33-inch Cast Wheel.....	10.00	7.00	4.50

	NEW.	CREDIT FOR SCRAP.
Journal Bearings.....	20 cents.	10 cents.
Malleable Iron.....	5 "	1/2 "
Bolts, Nuts, Wrought Washers and all Wrought Iron except Axles...	5 "	1 "
Castings.....	2 "	3/4 "
Spring/Steel.....	5 "	3/4 "
Oak.....	3 "	
Pine.....	3 "	
Labor.....	.25c. per hour.	

All steel castings and steel wheels of the different makes to be charged at current market prices.

Removing, turning and replacing a pair of steel-tired wheels, \$7.

Removing and replacing a pair of cast-iron wheels, \$2.

Loss of service metal from steel-tired wheels as a result of slid spots or other causes, to be charged at the rate of \$2 per  $\frac{1}{8}$  inch thickness of tire.

Glass, paints and other materials to be charged at current market prices.

## LIST OF RAILROAD COMPANIES.

*The following is a complete list of the railroad companies which have given notice of the adoption of the Code of Rules for the interchange of passenger equipment cars:*

Baltimore & Ohio.	Mason City & Ft. Dodge.
Cairo, Vincennes & Chicago.	Nashville, Chattanooga & St. Louis.
Chicago, Burlington & Kansas City.	New York, Lake Erie & Western.
Chicago, Burlington & Quincy.	Northern Pacific.
Cincinnati, Hamilton & Dayton.	Pennsylvania, Poughkeepsie & Boston.
Cleveland, Cincinnati, Chicago & St. Louis.	Sioux City & Northern.
Cornwall & Lebanon.	Southern Pacific Company.
Grand Rapids & Indiana.	St. Louis, Keokuk & North-Western.
Fitchburg.	Toledo & Ohio Central Extension.
Florida Central & Peninsular.	Union Pacific.
Hannibal & St. Joseph.	Wabash.
Kansas City, St. Joseph & Council Bluffs.	

## MINUTES OF MEETINGS OF THE EXECUTIVE COMMITTEE.

MINUTES OF A MEETING OF THE EXECUTIVE COMMITTEE HELD IN BUFFALO, NEW YORK, SEPTEMBER 17, 1890.

Members present: Messrs. Kirby, Demarest, Chamberlain, Barr, Marden, Blackall and Bissell.

The minutes of the meeting held at Old Point Comfort, in June, were read and approved.

The report of the Committee on Standards for Freight Cars with Air Brakes was read, as follows:

"CHICAGO, August 11, 1890.

"*John W. Cloud, Esq., Secretary Master Car-Builders' Association, Chicago:*

"DEAR SIR,—The committee appointed to report on the location of air-brake staff on freight cars submits the following:

"We find that in 1888, a committee composed of Messrs. Forney and Kirby reported on Standards and Appliances for the Safety of Trainmen. In their report they locate the brake staff on the left-hand corner of the car when a person is standing on the track, facing the car, the center of the shaft to be twenty inches from the middle of the car. This was confirmed by letter ballot, and, we find, is in confirmation of the design recommended in 1879, at Chicago.

"The drawing represented in the Brake Committee's report is evidently an oversight; your committee find no mention in the report of any intention to change the standard, nor are any figures given on the plate. We further find that a large majority of the cars now in service conform to the Master Car-Builders' standard of 1879.

"We therefore recommend that Plate No. 11 of 1889 be changed so as to conform to the design shown on page 223, Fig. 27, 1889, in publishing the annual report for 1890.

"B. K. VERBRYCK,

"G. W. RHODES,

"J. TOWNSEND,

"Committee."

The report of the committee was approved, and on motion of Mr. Blackall, seconded by Mr. Barr, the secretary was instructed to have new cuts substituted for Plates IX and XI of the standards, showing the hand brake wheel on the left-hand side of the end of the car when one stands facing the car. The standard details as shown on Plate X to be retained in Plate XI and a note to be added, explaining how the hand brake wheel should be connected when only one hand brake wheel is used.

The matter of standard Christie brake head and shoe was then brought up by the Secretary presenting a new drawing which he had prepared in accordance with the instructions of the Executive Committee, for use in the proceedings soon to be issued. The drawing makes no change in the dimensions of the head and shoe, but shows the construction a little more accurately than the old drawing. It was moved by Mr. Barr and seconded by Mr. Demarest, to have a cut prepared from this drawing substituted for Plate V in the proceedings soon to be issued.

The Secretary then submitted a statement of the receipts and disbursements from the Annual Convention in June to September 15, inclusive, as follows:

Receipts .....		\$4,719.23
Disbursements—		
Reporting Convention.....	\$134.87	
Printing, stationery and electros.....	579.75	
Secretary's salary, May 1 to September 1.....	875.00	
Moving office to Chicago.....	50.75	
Drawing of brake shoe.....	21.20	
Postage.....	22.69	
Sundry expenses.....	17.13	1,701.39
In bank.....		\$3,017.84

The disbursements as above given were duly authorized, and the Secretary was authorized by motion to keep the current funds of the Association in the Illinois Trust and Savings Bank.

It was then decided by motion that it would not be necessary to publish in the proceedings the cuts of journal box and lid for 60,000-pound cars, as recommended by the committee, inasmuch as the cut with the lid changed in accordance with the order of the convention, would be published, and there would be no difference in the two cuts.

The sub-committee of the Executive Committee having under advisement the subject of contour lines of the Master Car-Builders' coupler and the maintenance of these standards, reported progress through the chairman of that committee, Mr. E. Chamberlain, who asked for an extension of time to further work out the templates which they found necessary to recommend.

The Executive Committee then decided to instruct the committee appointed to confer with the Master Mechanics' committee on the matter of meetings, to vote for Cape May as the place for the meeting in 1891, providing the Master Mechanics' committee will vote for the same place.

In deciding the business for the convention of 1891 the Executive Committee confirmed the appointments which had already been made by Mr. Kirby, and the subjects and committees are as follows:

1. Lettering Freight Cars—Messrs. E. W. Grieves, G. W. Demarest and R. D. Wade.
2. Metal for Brake Shoes—Messrs. G. W. Rhodes, B. K. Verbryck and E. B. Wall.
3. Steam Heating and Ventilation for Passenger Cars—Messrs. J. N. Barr, T. A. Bissell, J. W. Marden, J. C. Barber and W. H. Lewis.
4. Steel Plate and Malleable Iron in Car Construction—Messrs. Wm. Forsyth, John Mackenzie and E. D. Bronner.
5. Wheel Guarantee—Messrs. J. J. Hennessey and Thos. Sutherland.
6. Joint Inspection at Interchange Points—Messrs. A. M. Waitt, H. C. McCarty, Samuel Irvin, Harvey Middleton and William Garstang.
7. Air-Brake Standards and Inspection and Care of Air Brakes on Freight Cars—Messrs. John S. Lentz, Wm. Turreff and N. W. Sample.

It was decided to refer the matter of air-brake standards and the consideration of any questions looking toward the improvement of same, in accordance with the instructions of the convention, to the same committee that Mr. Kirby had named on "Inspection and Care of Air Brakes on Freight Cars."

The meeting then adjourned.

**MINUTES OF A MEETING OF THE EXECUTIVE COMMITTEE OF THE MASTER CAR-BUILDERS' ASSOCIATION, HELD IN BUFFALO, NEW YORK, NOVEMBER 25, 1890.**

Members present — Messrs. Kirby, Lentz, Chamberlain, Blackall and Bissell.

The minutes of the preceding meeting were read and approved.

The Secretary then submitted items of expense since the last meeting, as follows :

Engraving .....	\$ 88.75
Postage .....	41.46
Cost of Proceedings.....	900.05
Secretary's Salary, for September and October.....	500.00
Stationery and Printing.....	9.35
Exchange .....	4.70
Sundry Expenses.....	1.30
Total .....	<u>\$1,545.61</u>

The Executive Committee formally authorized the above expenditures, and the Secretary further reported a balance in bank of \$2,262.76.

A communication from Mr. E. W. Grieves on the subject of standard form of wheel at hub was read and laid upon the table.

It was then decided upon motion, that the Executive Committee would submit to the convention next June, the journal box for 60,000-pound cars, which was defeated by the letter ballot of 1890, with some modifications as to lid to be decided at next meeting of the Executive Committee.

The place of meeting in 1891 was then considered, and Messrs. Blackall, Lentz and Kells were appointed as a Committee on Arrangements for headquarters, etc.

The meeting then adjourned.

**MINUTES OF MEETING OF THE EXECUTIVE COMMITTEE OF THE MASTER CAR-BUILDERS' ASSOCIATION, HELD IN NEW YORK CITY, MAY 7, 1891.**

Members present—Messrs. Kirby, Lentz, Grieves, Demarest, Casanave, Chamberlain, Mackenzie, Blackall and Marden.

The minutes of meeting held in Buffalo, New York, November 25, 1890, were read and approved.

The Secretary submitted items of expenses incurred and paid since the last authorization of the Executive Committee, as follows:

Secretary's Salary, November to April.....	\$1,500.00
Printing and Stationery.....	207.30
Electrotyping .....	39.35
Postage and Stamped Envelopes .....	27.54
Carried forward.....	<u>\$1,774.19</u>

<i>Brought forward</i> .....	\$1,774.19
Exchange .....	5.80
Expressage .....	1.95
Telegrams .....	11.10
Refund, over-payment, C. R. I. & P. R'y.....	11.05
	<hr/>
	\$1,804.09

These expenditures were thereupon duly authorized, and the Secretary also stated that the balance in his hands at this date amounted to \$1,121.40.

A communication from Mr. Ross Kells, Superintendent M. P., N. Y. L. E. & W. R. R. Co. in regard to prices charged for knuckles for Master Car-Builders' couplers was read and referred to the Arbitration Committee.

The Executive Committee then considered the matter of journal box for 60,000-pound cars, and after discussion it was decided to submit the box, bearing and wedge, as recommended by last year's committee, with the substitution of lid, such as used by the Lehigh Valley Railroad Company, and with the submission of this form of lid, to recommend to the Association that the action of the Association in 1889, adopting the Fletcher form of lid as standard be rescinded, and that the journal box, bearing and wedge, with a new form of lid, as shown, be submitted to the convention, with the recommendation that the whole matter be again submitted to letter ballot, for adoption.

It was decided, upon motion, that the Secretary should print notice at the top of reports for the next convention, calling attention of members to the fact that they should consider them as personal until the convention meets, and it was further decided that the question as to whether reports were suitable to send to members be left to the President of the Association.

The report of the sub-committee on maintenance of Master Car-Builders' coupler standards was then submitted to the Executive Committee by Mr. Chamberlain, chairman of the sub-committee; the report was read and drawings presented; it was accepted, and the committee discharged. The Executive Committee decided to submit the report substantially as made by the sub-committee, together with the drawings, to the convention, as the report of the Executive Committee.

The committee then adjourned, to meet in the afternoon of June 8, at Cape May.

NOTE.—Just before the Executive Committee meeting, there was an informal joint meeting of the committees of the Master Car-Builders' and Master Mechanics' Associations, at which the following resolution was passed:

*“Resolved, That it is the sense of the joint meeting of the Executive Committees of the Master Car-Builders' and Master Mechanics' Associations, after hearing from Mr. Walton an explanation of his arrangements and charges for accommodating those who intend being at the Cape May conventions, that there is no reason for complaint, and that the manager of the Stockton Hotel is making fair and satisfactory arrangements for the comfort of his guests.”*

#### MINUTES OF A MEETING OF THE EXECUTIVE COMMITTEE OF THE MASTER CAR BUILDERS' ASSOCIATION HELD AT CAPE MAY, JUNE 8, 1891.

Members present—Messrs. Kirby, Grieves, Lentz, Blackall, Bissell, Demarest, Barr, Casanave and Chamberlain.



The minutes of the last meeting of the Executive Committee were read and approved.

The Secretary submitted items of expenses incurred since the last meeting of the Executive Committee as follows:—

By Paid Rooms in New York for Executive and Arbitration Committee meetings .....		\$ 15.00
" " Stamps and Stamped Envelopes .....		22.64
" " Telegrams .....		3.03
" " Record book .....		1 50
" " Press copy book .....		1.25
" " Exchange .....		.50
" " One Rubber Stamp .....		.50
" " Expressage on Reports .....		1.65
" " Electrotyping .....		85.00
" " Printing .....		232.50
" " Secretary's Salary for May .....		250.00
Total .....		\$613.57

which expenditures were formally authorized.

The annual report of the Secretary, prepared for presentation to the convention, was then presented to the Executive Committee and ordered read in the convention; also the Treasurer's report was heard and referred to the convention.

The matter of annual dues to recommend to the convention was considered, and it was decided to recommend that \$5 per vote be the assessment for the year 1891.

The reports of the committees, which had been already distributed to the members, were then discussed and ordered presented to the convention.

The meeting then adjourned to meet again at the call of the Secretary.

#### MINUTES OF A MEETING OF THE EXECUTIVE COMMITTEE OF THE MASTER CAR-BUILDERS' ASSOCIATION, HELD AT CAPE MAY, JUNE 11, 1891.

Members present — Messrs. Kirby, Chamberlain, Barr, Demarest, Casanave, Blackall, Bissell, Marden and Grieves.

Mr. John W. Cloud was appointed Secretary for the ensuing year on the same conditions as last year, namely, salary, \$3,000, including office rent and clerk.

The members of the old Arbitration Committee were elected as follows: Mr. F. D. Casanave, chairman; M. M. Martin, J. W. Marden, G. W. Rhodes and John Mackenzie.

The meeting then adjourned until Friday, June 12, at 8 o'clock P.M.

#### MINUTES OF A MEETING OF THE EXECUTIVE COMMITTEE OF THE MASTER CAR-BUILDERS' ASSOCIATION, HELD AT CAPE MAY, NEW JERSEY, JUNE 12, 1891.

Members present — Messrs. Kirby, Casanave, Grieves, Demarest, Bissell, Barr and Chamberlain.

Mr. J. M. Wallis, of the Pennsylvania Railroad Company, by invitation, submitted coupler gauges proposed by that company. After a thorough examination of

these gauges, it was moved and carried, that the Secretary be instructed to have gauges made somewhat similar to those presented by Mr. Wallis with such differences as were decided best ; also that the Secretary be authorized to call a meeting in Chicago, when he is ready with these gauges, and that so many of the Executive Committee as can be present at that meeting are authorized to act for the Executive Committee in regard to issuing gauges.

It was also moved and carried that the Secretary be instructed to obtain a set of master gauges for the gauges to be issued, and to retain the master gauges among the archives of the Association.

A communication from Mr. E. S. Marshall, Secretary of the Southwestern Railway Club, which was referred to the Executive Committee by the Association, was then considered and laid upon the table.

After some discussion of subjects for the next Convention, the meeting adjourned.

## CIRCULAR RELATING TO LETTER BALLOTS

ON LETTERING FREIGHT CARS; JOINT INSPECTION; AIR BRAKE STANDARDS;  
JOURNAL BOX, BEARING, WEDGE AND LID FOR 60,000-POUND  
CARS AND LID FOR OLD STANDARD JOURNAL BOX.

*To the Members of the Master Car-Builders' Association :*

During the several sessions of the Convention held at Cape May, New Jersey, in June, 1891, it was decided to submit recommendations for standards to decision by letter ballot, as follows :

### LETTERING FREIGHT CARS.

The committee which reported on lettering freight cars submitted drawings showing the proposed lettering of box, stock, gondola and flat cars, which drawings showed the numbers upon the doors of box and stock cars, in addition to other marking recommended by the committee under the head of "General." In discussing the report at the Convention it was decided, upon motion, to have the car numbers omitted from the car doors, and to submit the recommendations of the committee, with this modification, to a letter-ballot vote for adoption as a standard practice of the Association.

The report of the committee as made, with only the modification of omitting the car numbers from the car doors as directed by the Convention, is as follows :

### REPORT OF COMMITTEE ON LETTERING FREIGHT CARS.

*To the President and Members, Master Car-Builders' Association :*

Your committee, appointed to consider the subject of standard marking for freight cars, submits the following recommendations, in connection with Figures 1 and 2, illustrating the proposed standards as applied to box, stock, gondola and flat cars.

#### BOX CARS.

1st. The half of the side of the car on which the doors do not slide should show the name of the railroad company, with the number of car immediately below it, and it is preferable that the name be spelled out in full, but if abbreviations are used they should be such as to clearly indicate the name of the road. When initials only are used it is urged that the name appear in full below the number in letters not over 4 inches high. When necessary, in order to present the full name of the railroad company, two lines should be used, as shown. The letters and figures for this marking should be 7 to 9 inches high. The light weight of the car, with such other information as is necessary in connection therewith, should be placed below the number of car, near the sill, using letters and figures 3 or 4 inches high.

2nd. The half of the side of the car on which the doors slide should be reserved for trade marks when used, also for marking air brake and Master Car-Builders' standard couplers, when cars are so equipped and marked, or for any other special marking; the capacity of car, and, if so desired, the size of journal to be placed on this half of car, near the sill, using letters and figures 3 or 4 inches high.

3rd. The side doors on each side of car should be marked near the top with the initials of railroad company, using letters 4 or 5 inches high; the initials and number of car should be marked on the inside of car, over the door opening.

4th. Each end of the car should be marked near the top, on the right-hand side, facing the end of the car, with initials of railroad company and number of car, using letters and figures 4 or 5 inches high.

**STOCK CARS.**

5th. On the half of the side of car on which doors do not slide it is preferable, rather than to place the marking on the slatting, that a board be placed, extending from the corner post to one of the body posts, sufficiently long to contain the name of the railroad company, or, if necessary in order to give the full name of the railroad company, two boards may be used, the number appearing on a third board below, in the same manner as explained for box cars, using letters and figures of the same size as for box cars. If abbreviations or initials only are used the same directions should be followed as are given for box cars. The light weight of the car, with such other necessary information, should be placed on the side sill, using letters and figures 3 or 4 inches high.

6th. Suitable boards should be placed on the half of the side of car on which doors slide, for any marking that may be desired, such as trade marks, air brakes, Master Car-Builders' standard coupler, etc.; the capacity of the car, and, if so desired, the size of journal should be placed on the side sill on this half of the car, using letters and figures 3 or 4 inches high.

7th. The side door on each side of car should be marked on the top rail with the initials of the railroad company, using letters 4 or 5 inches high. The initials and number of car should be marked inside over the door opening.

8th. Each end of car should be marked on the slatting with the initials of road and number of car, using letters and figures of same size as for box cars. If the initials cannot be placed on the slatting, a board should be used, fastened on the right-hand side when facing the end of car.

**GONDOLA CARS.**

9th. Gondola cars should be marked on the side near one end of car with the name of railroad company, and number of car immediately below it, using letters and figures 6 to 9 inches high. It is preferable that the name be spelled out in full; but, if abbreviations are used, they should be such as to clearly indicate the name of the road. If initials are used, it is urged that immediately below the number the full name of the railroad company should appear in letters not over 4 inches high. When necessary in order to present the full name of the road, two lines may be used as shown. Any other marking desired, such as trade marks, air brakes, Master Car-Builders' standard coupler, etc., should be placed near the opposite end of car. The initials of road, followed by number of car, should be placed on the side sill, near the center of car, for use in case the side planks are removed. The light weight of the car, with such other necessary information, should be placed on the side sill below the number, using letters and figures 3 or 4 inches high. The capacity of car, and, if so desired, the size of journal, should be placed on the side sill at the opposite end of car, using letters and figures 3 or 4 inches high.

10th. When cars have stationary ends, the initials of railroad company and number of car should be marked on each end near the top, at the right-hand side when facing the end of car, using letters and figures the same size as for box cars.

**FLAT CARS.**

11th. Flat cars should be marked on the side sill, near the center of car, with the name of the railroad company, followed by the number of car, letters and figures to be as large as can be used to advantage. Where possible, the name of the road should be spelled out in full, or, if abbreviations are used, they should be such as to clearly indicate the name of the road, but if only initials are used, the full name should appear in smaller letters. The light weight of the car, with such other necessary information, should be placed near one end of the car; the capacity of car, and, if so desired, the size of journal, should be placed near the opposite end, using letters and figures the same size as for gondola cars. Any other marking that may be desired, such as trade marks, air brakes, Master Car-Builders' standard coupler, etc., should be placed in the most available space on the side sill.

**GENERAL.**

12th. Open cars of all other types, not herein provided for, should be marked as near like the marking described for gondola cars as the construction of such cars will admit, excepting that it may not be necessary to place the initials of railroad and number of car on the side sill.

13th. A portion of the outside and intermediate sills under all cars, preferably near the center of car, should be painted with brown or black paint, and on this space the initials of road and number of car should be stenciled in white, using letters and figures 3 or 4 inches high.

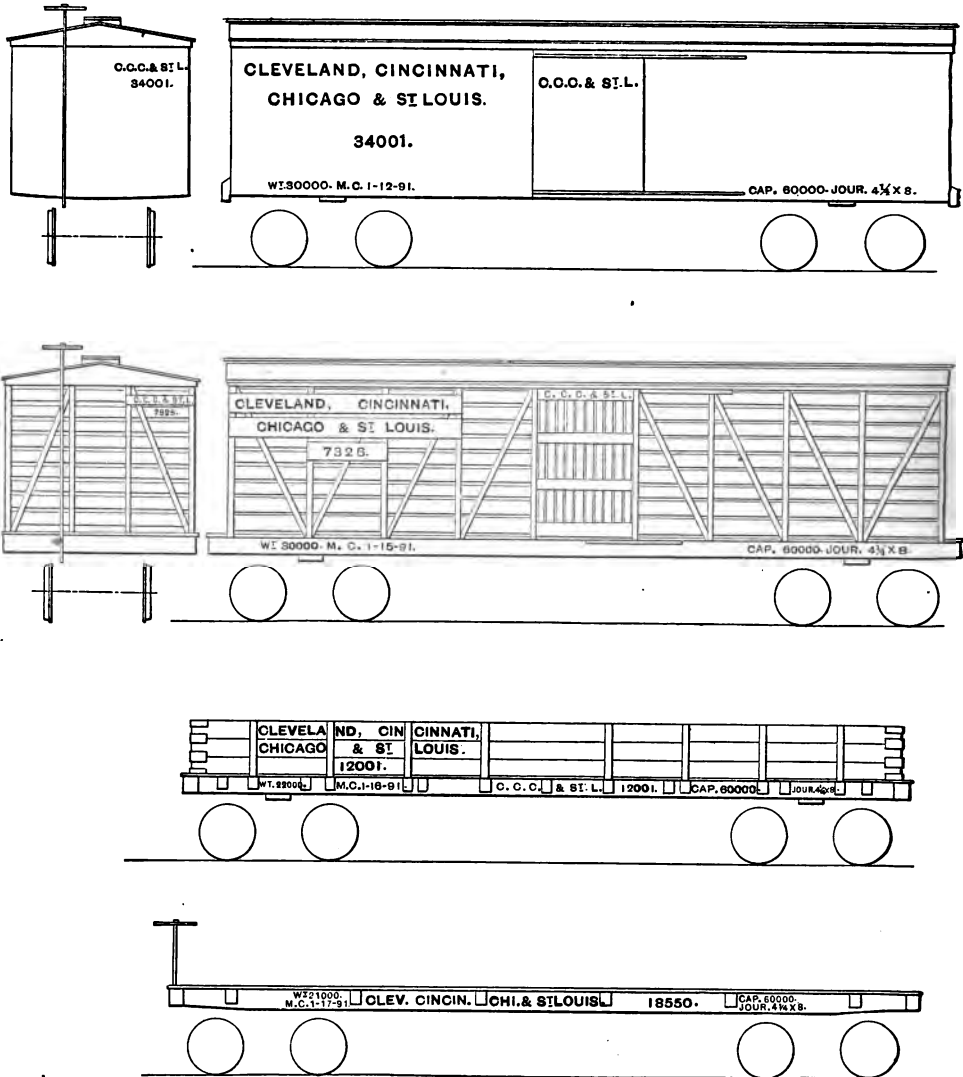


FIG. 1.

WITH REPORT OF COMMITTEE ON "LETTERING FREIGHT CARS."  
PROPOSED STANDARD ILLUSTRATED.

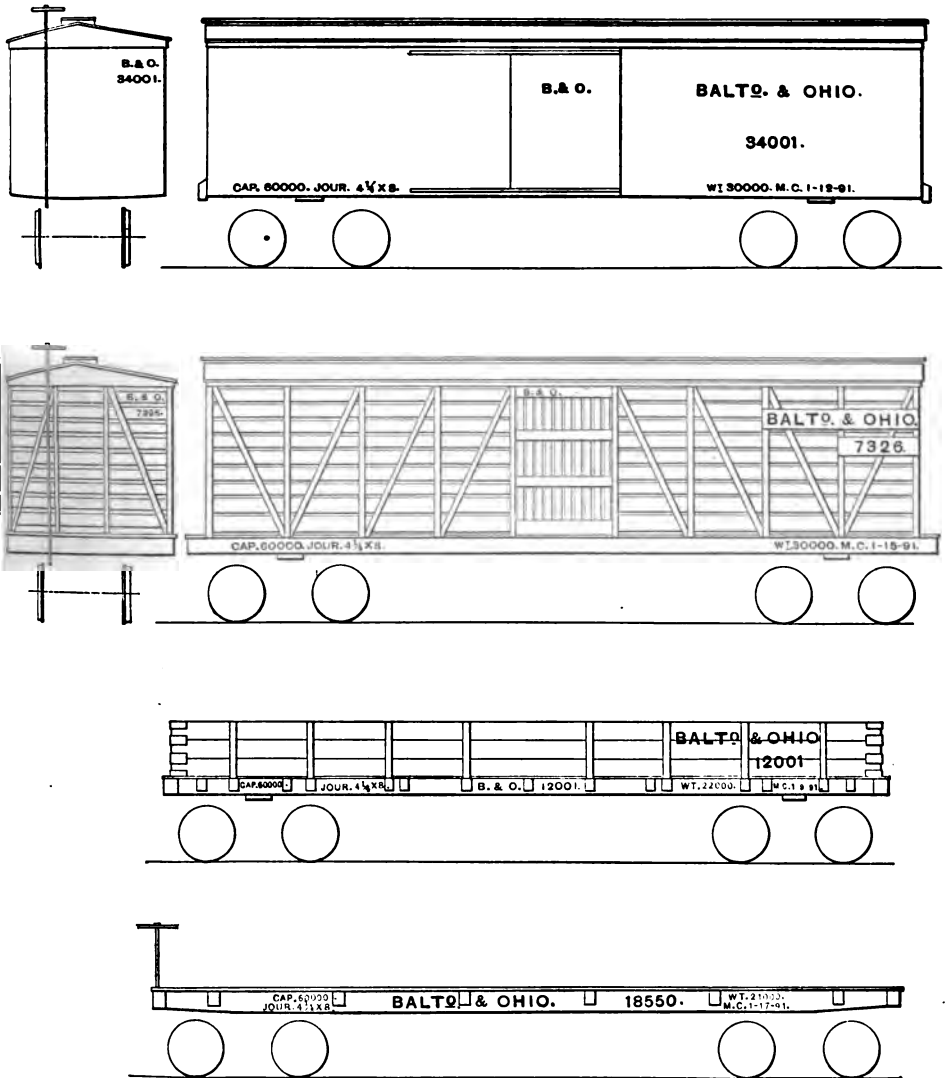


FIG. 2.

WITH REPORT OF COMMITTEE ON "LETTERING FREIGHT CARS."  
PROPOSED STANDARD ILLUSTRATED.

14th. The initials of railroad and number of car should be stenciled on both sides of bolster, wooden or channel iron transom in each truck, under all cars. The size of journal should be marked on each side of truck in the most convenient place.

Respectfully submitted,

E. W. GRIEVES,  
G. W. DEMAREST,  
R. D. WADE,  
*Committee.*

The question to be decided on this subject by letter ballot is the adoption of the recommendations in this report, which is the whole report, or:

(a) Are you in favor of the adoption of the recommendations in the report of the Committee on Lettering Freight Cars as the standard practice of the Association?

#### JOINT INSPECTION.

The committee which reported upon the subject of Joint Inspection reviewed the different practices of hiring and paying men to do inspection at interchange points, and made certain recommendations in detail, the first three of which were as follows:

"1st. The adoption of a standard form of joint inspection, with form of agreement and rules governing the same, as a standard practice of the Association.

"2nd. The adoption of a standard form of weekly report of defective cars received and delivered at joint inspection points as a standard of the Association.

"3rd. The adoption of a standard joint inspection defect card as a standard of the Association."

These three recommendations were ordered submitted to letter-ballot vote by the convention, and they are given separately in full, as follows:

#### SYSTEM OF JOINT INSPECTION.

Each road to hire its own inspectors, and to place them, in all matters pertaining to inspection of interchange cars, in charge of a Chief Joint Inspector, who shall be held entirely responsible for the inspection at that point. The inspectors to be subject to their respective car foremen to do repair or other work, when not inspecting for interchange.

#### JOINT INSPECTION AGREEMENT

##### BETWEEN THE

##### COMPANIES AT.....

For the purpose of facilitating the interchange of cars between the above named roads at ....., it is agreed between the undersigned, on behalf of the above roads:

1st. There shall be appointed, at a joint meeting of the representatives of each of the above roads, a Chief Joint Inspector (and..... assistants and clerk, if necessary), whose duty it shall be to see that all cars received or delivered by each company respectively, are carefully and impartially inspected, and the decision of the Chief Joint Inspector (or his assistants) as to the fitness of a car to run, shall be final and binding on each company.

2nd. Questions as to liability for repairs shall be decided by the Chief Joint Inspector (or his assistants), subject to the following Article.

3rd. Any road, being a party to this Agreement, may appeal from the decision of the Chief Joint Inspector (or assistants) to a committee, who shall be agreed upon annually by the heads of the car departments of the roads who are parties to this Agreement. The decisions of the committee shall be final and binding, and their decision shall govern the Chief Joint Inspector (and assistants) in his future action.

4th. Each company to repair the cars belonging to its own line, either at its own expense, if it be shown that the damage occurred prior to the delivery to the other line, or at the expense of one of

the other companies, if the damages occurred while in the possession of the other line; but in order to prevent delays, all cars will be received by each of the companies when not in good order but safe to run, but an M. C.-B. defect card shall be applied, covering the defects, by the Chief Joint Inspector (or assistants).

5th. Should a car be received which requires light repair, such work will be done by the company having possession of the car at the time, and the Chief Joint Inspector (or his assistants) shall issue an M. C.-B. defect card, covering the defects, chargeable to the road which is responsible for the repairs.

6th. The Chief Joint Inspector (or assistant) shall be the umpire as to the decisions of the several local joint inspectors in the joint inspection, and his judgment in all matters involved shall be final and binding on all the local joint inspectors, subject only to the provisions made in Article No. 3.

7th. Local joint inspectors, when not occupied in the inspection of interchange cars, or duties pertaining thereto, shall be subject to the car foreman in the yards where they are located, and shall do such work as they shall be directed to do, in oiling, inspecting or repairs, provided that such work shall not be allowed to interfere with their work in the joint inspection.

## RULES GOVERNING THE JOINT CAR INSPECTION

### BETWEEN THE

.....COMPANIES AT.....

1st. Cars are to be inspected and claims made in accordance with the Master Car-Builders' Rules of Interchange.

2nd. The Chief Joint Inspector (and his assistants) shall have entire charge of the inspectors in the different yards in all matters pertaining to the inspection and interchange of cars between the roads which are parties to this Agreement, and the inspectors will receive orders only from the Chief Joint Inspector (or assistants) in such matters.

The Chief Joint Inspector (or assistants) shall decide all questions arising between the inspectors as to the fitness of a car to run; as to liability for repairs, and carding for defects, and his decision shall be final and binding, except as provided in Article No. 3 of the attached Agreement.

The Chief Joint Inspector (or assistant) is expected to see that the inspection is done promptly and satisfactorily.

3rd. Inspectors are not permitted to set back a bad order car to the delivering road, no matter what its condition, but such car must be held for the Chief Joint Inspector's (or assistant's) inspection and decision.

In case of a car in bad order or needing repairs being overlooked at the inspection before delivery, and the car is delivered, the said car may be disposed of by the decision of the Chief Joint Inspector (or assistants).

4th. Cars must not be transferred on account of defects, except by order of the Chief Joint Inspector (or assistants).

5th. The Chief Joint Inspector (or assistants) shall visit the delivering and receiving points of each road at least once each day or oftener if possible, and he must personally inspect any bad order cars for which claims have been made, or about which disputes have arisen, and decide the points involved.

6th. The Chief Joint Inspector shall be governed by any special rules issued by any of the roads parties to this Agreement, after having given ten days' notice of such special rule to the heads of the car departments of each of the companies who are parties to this Agreement.

7th. These Rules may be amended from time to time by mutual agreement of the heads of the car departments of the roads who are parties to this Agreement.

Your Committee would recommend that at inspection points where there is only work enough for one man for each road, that the inspection be done by the two men jointly, cars going both ways to be inspected by both men at the same time.

The question to be decided on this subject by letter ballot is:

(b). Are you in favor of the adoption of the System of Joint Inspection, the Form of Joint Inspection Agreement, and the Rules Governing Joint Car Inspection as are here given, as the standard practice of the Association?



**FORM OF WEEKLY REPORT OF DEFECTIVE CARS RECEIVED AND DELIVERED AT  
JOINT INSPECTION POINTS.**

The Committee says in its report, "As it is impossible for all inspection points to be frequently visited, we would recommend a system of weekly reports on proper blanks for that purpose, to show the number and initials of cars passing the inspection points, with statement of material defects, the report to show what these defects were, and whether the cars were carded for them, repaired or transferred. By studying a regular report of this kind, the errors of judgment in inspectors can be soon seen and corrected."

Below are given the forms of report recommended by the Committee:

**Report of Defective Cars RECEIVED from Connecting Lines**

during the week ending.....189...., at.....Yard.

.....*Chief Joint Inspector.*

Car No.	CAR INITIALS.		Date.	DEFECTS.	Defects, old or new.	RECEIVED from	PASSED.				Transfer Order.
	Owners.	Line.					Re-paired	Card-ed.	Card-ed by	Notation.	

**Report of Defective Cars DELIVERED to Connecting Lines**

during the week ending.....189...., at.....Yard.

.....*Chief Joint Inspector.*

Car No.	CAR INITIALS.		Date.	DEFECTS.	Defects, old or new.	DELIVERED to	PASSED.				Transfer Order.
	Owners.	Line.					Re-paired	Card-ed.	Card-ed by	Notation.	

The question to be decided on this subject by letter ballot is:

(c) Are you in favor of the adoption of the forms of report of defective cars received and of defective cars delivered as are here given, as standard forms of the Association?

## JOINT INSPECTION DEFECT CARD.

The Committee also recommended the adoption of a standard joint inspection defect card to be generally used in the place of the great variety and styles of joint inspection defect cards now used. The card proposed as standard, is printed on both sides alike and has two stubs, one to be retained by the Chief Joint Inspector and the other to be sent at once to the road against which the card is made out.

The form of card proposed is given below, and it will be observed that it conforms with the standard defect card as prescribed in the Rules of Interchange, with the exception that it is marked "Joint Inspection M. C.-B. Defect Card," and is of such form that it can be filled in with the names of any two railroad companies parties to the transfer instead of only one railroad company, as provided in the defect card prescribed in the Rules of Interchange.

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## AIR-BRAKE STANDARDS.

The Chairman of the Committee on Air-Brake Standards added to the report as printed and distributed to the members, a recommendation as made by Mr. E. B. Wall, who was chairman of the committee which proposed the present air-brake standards of the Association, and which recommendation was received too late for incorporation in the report, as follows :

"I would call attention to the desirability of changing the diameter of the air-brake gear pins from  $1\frac{7}{8}$  inches to  $1\frac{3}{4}$  inches. I originally made the recommendation that this dimension should be  $1\frac{7}{8}$  inches as it now stands, and that the holes into which the pins fit be  $1\frac{1}{8}$  inches in diameter, the opinion of our committee being, at that time, that such a snug fit would greatly enhance the efficiency of the brake gear. Practical experience, however, has clearly demonstrated that the difference in diameter in the hole and the pin is too slight, and that the workmanship obtained is not of a quality to always insure that the pin will fit in the hole when the nominal difference is only  $\frac{1}{8}$  inch. It, therefore, seems desirable to recommend changing this standard as above suggested. The difference between the diameter of the hole and the pin will then be  $\frac{1}{2}$  inch. The change would involve no alteration of the holes, and will not interfere with brakes already in existence, or with their repairs."

This recommendation was adopted at the convention, and ordered submitted to letter-ballot vote.

The question to be decided on this subject by letter ballot is :

(e) Are you in favor of changing the present standard size of pin in the air-brake standards of the Association, from  $1\frac{7}{8}$  inches in diameter to  $1\frac{3}{4}$  inches in diameter?

## JOURNAL BOX, BEARING, WEDGE AND LID FOR 60,000-POUND CARS.

The Executive Committee submitted a report to the Association, along with drawing of the journal box for 60,000-pound cars submitted by the committee at the convention of 1890, but with such modifications only as were necessary to show a different style of lid for the journal box, because the Executive Committee thought that the defeat of the proposed standard by letter-ballot vote was due to the difference of opinion in regard to the lid proposed at that time. The Executive Committee recommended that the action of the Association adopting the Fletcher type of lid as a standard be rescinded, and that the box with lid as here submitted be adopted.

The report of the Executive Committee was adopted, and its recommendations were ordered submitted to letter-ballot vote. The plates herewith show the journal box with bearing, wedge and lid as ordered submitted to letter ballot.

The questions to be decided on this subject by letter-ballot vote are :

(f) Are you in favor of rescinding the action of the Association when it adopted the Fletcher lid as a standard?

(g) Are you in favor of the adoption of the journal box, bearing, wedge and lid for 60,000-pound cars as shown on plates A and B herewith?

## LID FOR OLD STANDARD JOURNAL BOX.

Mr. John S. Lentz submitted a drawing showing the same lid as that proposed for the journal box for 60,000-pound cars adapted to the old standard journal box by making some modifications in the face of the latter box, so the lid would properly fit, and moved that it be adopted by the Association and submitted to letter-ballot vote.

This motion prevailed, and the lid as applied to the old standard journal box is shown in plate C herewith.

The question to be decided by letter ballot on this subject is :

(A) Are you in favor of the modification of the old standard journal box, as shown in plate C, to receive this lid, and the adoption of the modified box with lid as shown as a standard in lieu of the old standard journal box without any lid?

The eight questions above stated, and which are herewith submitted to letter-ballot vote, are referred to by their respective letters for identification on the accompanying slip, and each member is requested to vote by writing "yes" or "no" opposite each question on the accompanying slip, and to re-mail it to the Secretary at the address given below.

The votes will be counted September 2, 1891, and any votes not received at the Secretary's office before that date will be excluded from the count, as provided by the Constitution.

The votes must either be "yes" or "no" to each question voted upon, as no qualified votes can be counted.

The number of votes should agree with the bills for 1891, or the Secretary should be advised of any needed corrections in returning the vote.

JNO. W. CLOUD, *Secretary*,  
No. 974 Rookery Building, Chicago, Ill.

## LETTER-BALLOT VOTING SLIP.

Members are requested to vote by writing "yes" or "no" on this slip opposite each of the following questions, sign the vote and remail it to the Secretary, at No. 974 Rookery Building, Chicago, Illinois. The votes will be counted September 2, 1891, and any ballots not received before that date will be excluded, as provided in the Constitution.

All votes must be either "yes" or "no" to each question, as no qualified vote can be counted.

The number of votes should agree with the bills for 1891, or the Secretary should be advised of any needed corrections in returning the vote.

a	Are you in favor of the proposition "a" on circular herewith as M. C. B. Standard "a" .....
b	" " " " " "b" " " " " "b" .....
c	" " " " " "c" " " " " "c" .....
d	" " " " " "d" " " " " "d" .....
e	" " " " " "e" " " " " "e" .....
f	" " " " " "f" " " " " "f" .....
g	" " " " " "g" " " " " "g" .....
h	" " " " " "h" " " " " "h" .....

*Sign name here*.....

*Number of votes to which member is entitled*.....

## RESULTS OF LETTER BALLOTS.

A summary of the votes cast on each of the questions submitted to Letter Ballot is given below, together with the results of the ballot. (For details, see end of volume.)

## SUMMARY OF VOTES AND RESULTS.

SUBJECTS VOTED ON.	Question.	NUMBER VOTES CAST.			No. Votes necessary for Adoption.	Results of Ballot.
		Affirmative.	Negative.	Total.		
Lettering Freight Cars. ....	a	340	225	565	377	Rejected.
System of Joint Inspection. Form of Joint Inspection Agreement. Rules governing Joint Inspection. ....	b	360	207	567	378	"
Form of Report of Defective Cars received and delivered. ....	c	369	198	567	378	"
Joint Inspection Defect Card. ....	d	346	221	567	378	"
Air-Brake Standards. Change in Diameter of Pins from $1\frac{7}{8}$ inch to $1\frac{3}{8}$ inch. ....	e	530	36	566	378	Adopted.
Rescinding the Standard Fletcher Lid	f	417	149	566	378	"
Journal Box Bearing, Wedge and Lid for 60,000-lb. cars. ....	g	365	176	541	361	"
Lid for old Standard Journal Box. ....	h	378	159	537	358	"

STANDARD DIMENSIONS, FORMS OF CONSTRUCTION,  
ETC., ADOPTED BY THE MASTER CAR-  
BUILDERS' ASSOCIATION.

---

WHEELS AND AXLES.

---

SPECIFICATIONS AND GUARANTEE FOR CAST IRON WHEELS.

At the Twenty-third Annual Convention, held at Saratoga in 1889, specifications for Cast-Iron Wheels, as well as a form of Guarantee of Service to be required of wheelmakers, were recommended and ordered to be submitted to a letter-ballot vote. Both questions were so submitted, and more than two-thirds of the votes cast on each question were in favor of its adoption. The specifications and the Form of Guarantee are therefore standards of the Association.

They are as follows :

SPECIFICATIONS FOR CAST-IRON WHEELS.

1. "The chills in which the wheels of any one wheelmaker are cast shall be of equal diameters, and the same chill must not vary at different points more than one-sixteenth of an inch in diameter."

2. "Wheels of the same nominal diameter furnished by any one wheelmaker must not vary more than one-fourth of an inch above or below the mean size measured on the circumference, and the same wheel must not vary more than one-sixteenth of an inch in diameter. The body of the wheel must be smooth and free from slag, shrinkage or blow-holes. The tread must be free from deep and irregular wrinkles, slag, chill cracks, and sweat or beads in throat, which are one-eighth of an inch or over in diameter, or which occur in clusters of more than six inches in length."

3. "The wheels broken must show clean gray iron in the plates; the depth of pure white iron must not exceed seven-eighths of an inch or be less than three-eighths of an inch in the middle of the tread, and shall not be less than three-sixteenths of an inch in the throat. The depth of the white iron shall not vary more than one-fourth of an inch around the tread on the rail line in the same wheel."

4. "For each hundred wheels which pass inspection and are ready for shipment, one representative wheel shall be taken at random and subjected to the following test :

"The wheel shall be placed flange downward on an anvil block weighing not less than seventeen hundred (1,700) pounds, set on rubble masonry at least two feet deep, and having three supports not more than five (5) inches wide for the wheel to rest upon. It shall be struck centrally on the hub by a weight of one hundred and forty (140) pounds falling from a height of twelve (12) feet. Should this wheel stand five

(5) blows without breaking into two or more pieces, the hundred wheels shall be accepted."

"The above test shall apply to standard weight wheels from twenty-six to forty-two inches in diameter, used on the standard gauge roads."

"Or, the wheel shall be placed flange downward on a cast-iron ring weighing one thousand (1,000) pounds, the outside diameter of the ring being thirty-six and one-half ( $36\frac{1}{2}$ ) inches, the inside diameter twenty-four (24) inches, and thickness eight (8) inches, supported on rubble masonry at least two feet deep. It shall be struck on the plate, close to the rim, by a weight of one hundred (100) pounds falling from a height of seven (7) feet. When subjected to this test a five hundred and fifty (550) pound wheel shall stand twenty (20) blows; a five hundred and seventy-five (575) pound wheel, twenty-five (25) blows; and a six hundred (600) pound wheel, thirty (30) blows, without breaking a piece out. This test applies to 33-inch wheels. 26, 28 and 30 inch wheels must stand the twenty-five-blow test, and 36 and 42 inch wheels must stand the thirty-blow test."

5. "Should, in either case, the test wheel break in two or more pieces with less than the required number of blows, then a second wheel shall be taken from the same lot and similarly tested. If the second wheel stands the test, it shall be optional with the inspector whether he shall test a third wheel or not. If he does not so elect, or if he does and the third wheel stands the test, the hundred wheels shall be accepted."

6. "Wheels shall not vary from the specified weight more than two per cent."

7. "The flange shall not vary in the same wheel more than three thirty-seconds of an inch from its mean thickness."

8. "All wheels shall be numbered consecutively, and shall have the number, also the day, month and year when made, plainly formed on the inside plate in casting, and no two wheels shall have the same number."

#### GUARANTEE.

"THIS INDENTURE, made this.....day of.....18....  
and between.....party of the  
first part, and.....party of the  
second part, Witnesseth:

"The party of the first part hereby agrees to furnish to the party of the second part, free on board cars at.....  
.....chilled cast-iron wheels,.....inches in  
diameter for use under....."

2. "The party of the second part hereby agrees to pay to the party of the first part.....dollars for each wheel furnished, and to keep an accurate record of the mileage made by the wheels placed in service under cars in passenger equipment and under locomotives and tenders, and an accurate record of the number of months of service of the wheels placed in service under cars in freight equipment."

3. "The party of the second part hereby agrees when any wheel furnished



under the contract is scrapped, to furnish to the party of the first part a statement which will show :

1. The wheel number.
2. The service in which the wheel ran.
3. The amount of service in months or miles.
4. The cause of failure.
5. A charge against the party of the first part of fifty-five per cent of the price of the wheel mentioned above.
6. A credit to the party of the first part of

.....	cents per 1000 miles for 36 in. passenger equipment.
.....	" " " " " 33 " " "
.....	" " " " " 30 " " "
.....	" " " " " 36 " locomotive and tender equipment.
.....	" " " " " 33 " " "
.....	" " " " " 30 " " "
.....	" " " " " 28 " " "
.....	" " month " 36 " freight equipment.
.....	" " " " 33 " " "
.....	" " " " 30 " " "

" Except in case of wheels removed for the following causes :

1. Flat by sliding.
2. Chipped Flange.
3. Broken Flange, if the breakage is not caused by seams, worn through chill or worn flange.
4. Broken or Chipped Rim, not caused by rim being hollow.
5. Breakage of any kind caused by wreck or derailment."
4. " The party of the first part hereby agrees, on presentation of the statement above mentioned, to pay the party of the second part any balance due from lack of sufficient service on the part of the wheels (with above exceptions), to balance the charge, and the party of the second part hereby agrees to pay the party of the first part any balance due as shown by the aforesaid statement, settlements to be made quarterly."
5. " The party of the second part hereby agrees to hold, subject to the inspection of the party of the first part, for a period of thirty days after said statement has been rendered, any wheels (with above exceptions) which have not earned for themselves a credit equal to the amount charged against them."

6. " It is understood that the basis of settlement shall be as follows :

36-inch passenger wheels .....	70,000 miles.
33-inch passenger wheels .....	60,000 miles.
36-inch engine and tender wheels .....	60,000 miles.
33-inch engine and tender wheels .....	50,000 miles.
30-inch engine and tender wheels .....	45,000 miles.
28 and 26 inch engine and tender wheels .....	40,000 miles.
Refrigerator, through line and cattle cars .....	24 months.
All other freight cars .....	48 months."

**FORM OF WHEEL TREAD AND FLANGE.**

The engraving, Fig. 1, represents the standard form of tread and flange adopted by letter ballot in 1886. For the action with reference thereto, see Sixteenth Annual Report, pages 178 and 179, and Twentieth Annual Report, page 68.

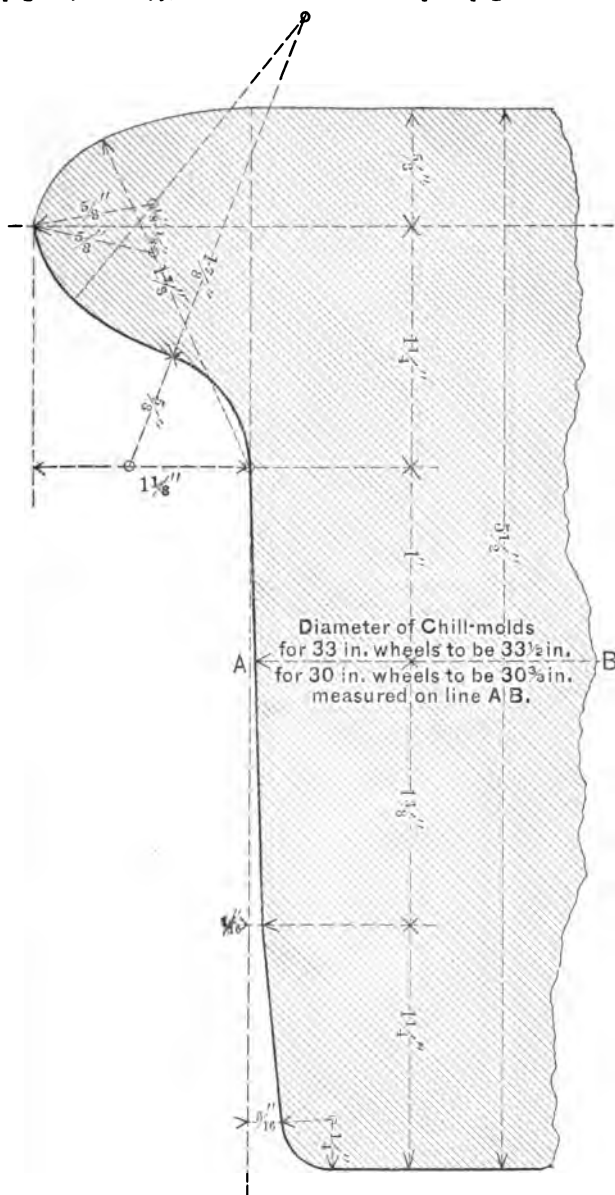


FIG. 1.

## DISTANCE BETWEEN THE BACKS OF THE FLANGES OF CAR WHEELS.

The standard distance between the backs of the flanges of car wheels, as indicated at A, Fig. 2, is 4 feet 5 $\frac{3}{8}$  inches.

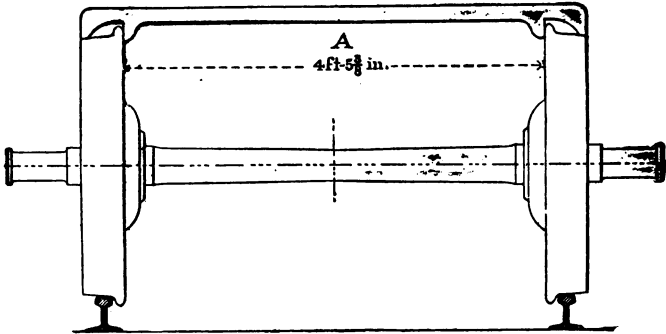


FIG. 2.

This distance was proposed in a resolution adopted at the Seventeenth Annual Convention, held in Chicago in 1883 (*see page 55 of the report of that meeting*) and was afterward submitted to and approved by a letter ballot (*see pages 118-120 of Seventeenth Annual Report*).

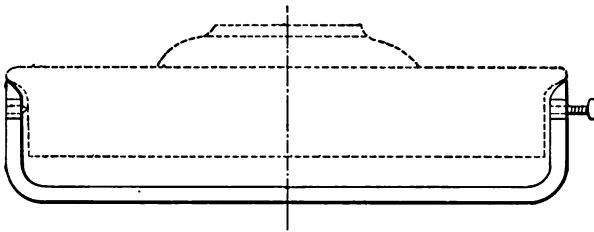
At the Nineteenth Annual Convention, held at Fort Monroe, Va., in 1885, a committee recommended (*see page 16 of report of that meeting*) that in fitting wheels on axles, a variation of  $\frac{1}{8}$  inch each way from the standard distance of 4 feet 5 $\frac{3}{8}$  inches between flanges be allowed, making the maximum distance 4 feet 5 $\frac{1}{2}$  inches, and the minimum distance 4 feet 5 $\frac{1}{4}$  inches. This recommendation was referred to a letter ballot and was adopted a standard by the Association (*see pages 111-119 of Annual Report*).

## WHEEL AND AXLE GAUGES.

At the Sixteenth Annual Convention, held in Philadelphia in 1882 (*see page 197 of report for that year*), it was

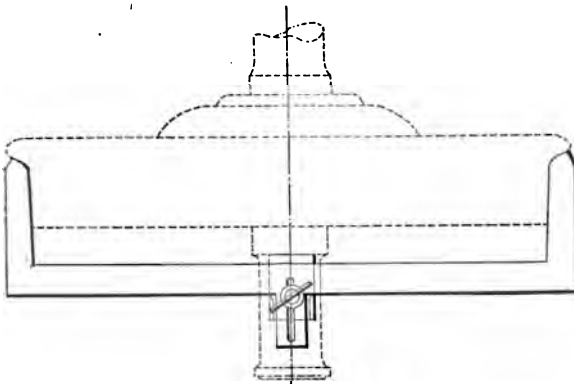
*Resolved*, That the sense of this meeting is that all the gauges recommended by the Committee on Wheel Gauge should be in use in all repair and car-building shops of every equipment.

These gauges are shown in Figs. 3-10.



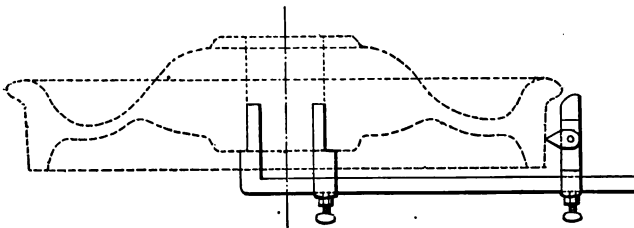
Diameter Testing Gauge.

FIG. 3.



Flange and Journal Gauge.

FIG. 4.



Wheel-Bore Testing Gauge.

FIG. 5.

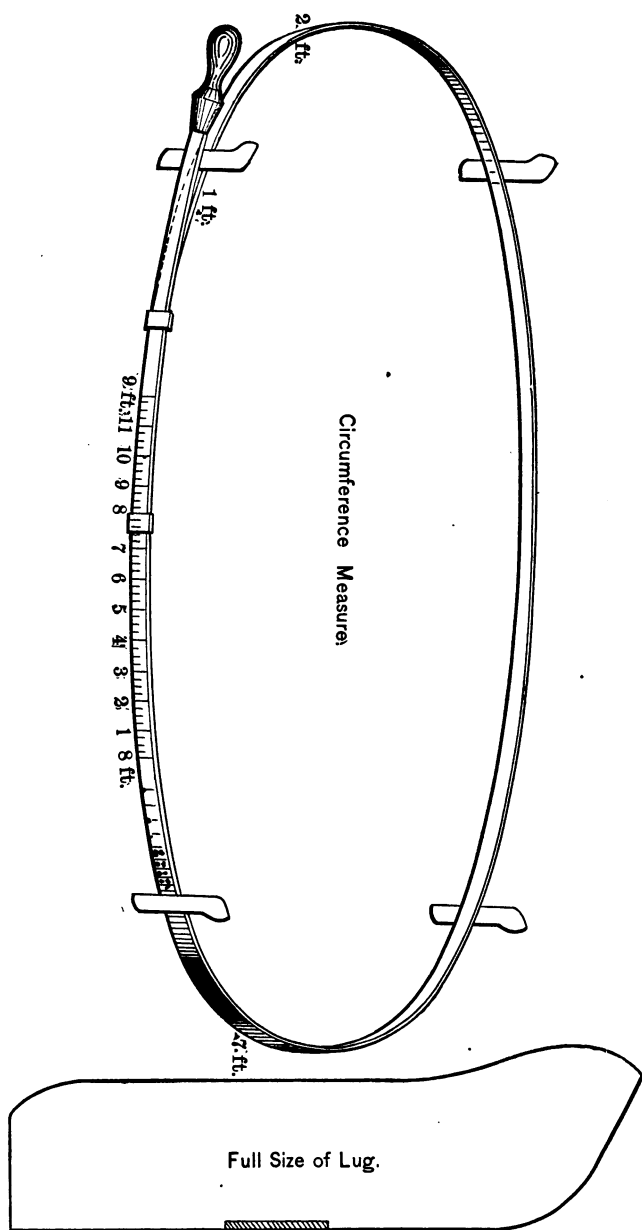
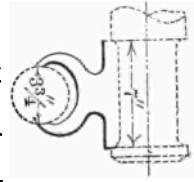
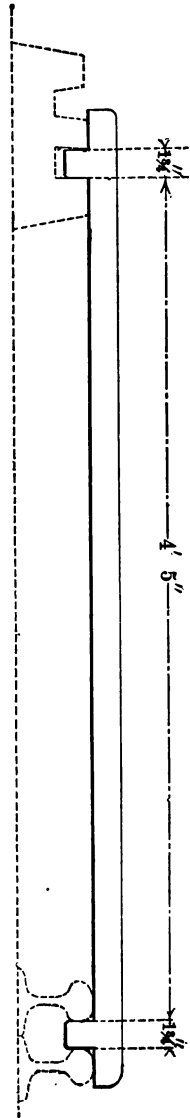


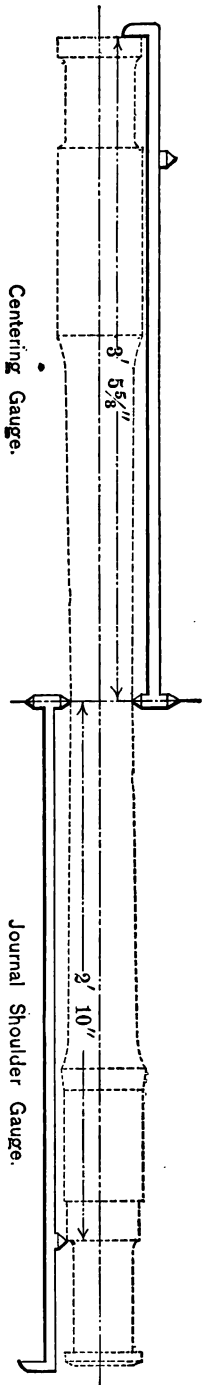
FIG. 6.



Journal Length and  
Diameter Gauge.  
FIG. 7.



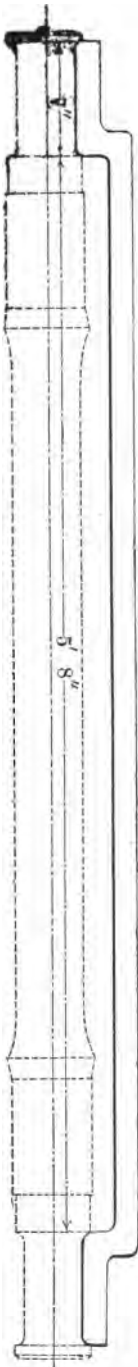
Guard Rail Gauge.  
FIG. 8.



Centering Gauge.

FIG. 9.

Journal Shoulder Gauge.



Journal Distance Gauge.  
FIG. 10.

## BORING WHEELS.

At the Seventeenth Annual Convention (*see page 57 of the report*), a resolution was adopted recommending that six dogs be used for centering wheels when they are bored.

## STANDARD AXLES.

At the Annual Convention, held in Boston in 1873, a standard for car axles was recommended, the form and dimensions of which, excepting the diameter in the middle, were substantially the same as those shown in Plate I. (*For other action with reference thereto, see Tenth Annual Report, page 99; Twelfth Annual Report, page 129; and Thirteenth Annual Report, page 103.*) The dimensions shown in Plate I, with the exception of the diameter in the middle, were adopted by both the Master Car-Builders' and American Railway Master Mechanics' Associations, after a conference of committees appointed by each Association. (*See Fourteenth Annual Report, page 130.*)

At the convention held in Saratoga in 1884, it was proposed to increase the diameter of the standard axle in the middle, from  $3\frac{3}{4}$  inches to  $4\frac{1}{4}$  inches. A resolution was adopted to refer the proposed change to the members of the Association for approval by letter ballot. It was so referred (*see pages 156-162 of the Eighteenth Annual Report*), and more than two-thirds of the votes cast were in favor of increasing the diameter in the middle to  $4\frac{1}{4}$  inches. This change has therefore been adopted, and Plate I represents the present standard axle, as modified by this action of the Association.

## STANDARD AXLE FOR 60,000-POUND CARS.

At the Twenty-third Annual Convention, held at Saratoga in 1889, a standard axle for cars of 60,000 pounds capacity, was recommended and ordered submitted to a letter-ballot vote; it was so submitted, and more than two-thirds of the votes cast were in favor of its adoption as standard; it is, therefore, a standard of the Association. The form and dimensions of this axle as adopted are shown in Plate VIII. (*For discussion, see Twenty-third Annual Report, pages 88 to 109.*)

## JOURNAL BOXES, BEARINGS, WEDGES AND LIDS, AND PEDESTAL.

Plates II, III and IV represent the standard for journal bearings, journal boxes and pedestals, recommended at the Eighth Annual Convention, held in Cincinnati in 1874. (*See page 40 of report for that year.*) This action was reaffirmed at the Fifteenth Annual Convention, held in New York in 1881. (*See pages 14, 15 and 27 of report for that year.*)

At the Twenty-fifth Annual Convention, held at Cape May in 1891, a journal box, bearing, wedge and lid for 60,000-pound cars were presented with drawings, and upon motion they were ordered to be submitted to letter ballot. This action resulted in more than two-thirds of the votes cast being in favor of their adoption, and the journal box, bearing, wedge and lid for 60,000-pound cars shown in Plates XV and XVI were adopted as standard of the Association by this action.

At the Twenty-fifth Annual Convention, held at Cape May in 1891, it was proposed to adapt the same form of lid as proposed for 60,000-pound journal box to the old standard journal box, and to make such modifications in the face of that journal

box as were required to properly adapt this lid. The question was submitted to letter ballot with drawings and received more than two-thirds of the votes cast in its favor. The result of this action was to modify the face of the journal box shown in Plate III as shown in Plate IIIB and to adopt this modification with the lid as shown in Plate IIIB as standard for this journal box.

The Fletcher journal box lid which was adopted as standard in 1889, was rescinded as standard by letter-ballot vote in 1891, when another form of lid was adopted as standard for the old standard journal box and also for the journal box for 60,000-pound cars.

#### BRAKE GEAR.

At the Twenty-third Annual Convention held at Saratoga in 1889, certain recommendations were made in regard to brake gear for air-brake cars and practices connected with the use of brakes. These recommendations were submitted to letter ballot, as ordered by the Convention, and each recommendation had more than two-thirds of the votes cast in its favor.

The following is a statement of the standards of construction and practice established by this action.

1st. The standard for maximum train-pipe pressure is 70 pounds per square inch.

2d. The standard for maximum brake power on freight cars is 70 per cent of the light weight of car.

3d. The standards for general arrangement of brake gear with hand brake at only one end, or at both, and with brakes inside hung or outside hung in either case, are as shown on Plate IX.

*Revised, 1890, to show hand-brake wheels at left hand side of center as one faces end of car, in accordance with instructions of Executive Committee. No change made in detail parts.*

4th. The standards for details of construction are as shown on Plate X. All levers 1 inch in thickness. All pins turned to  $1\frac{3}{8}$  inches diameter. All jaws or clevises made of  $\frac{3}{4}$  by  $2\frac{1}{2}$  inch iron. All rods  $\frac{3}{4}$  inch diameter.

*The size of pin was changed from  $1\frac{7}{8}$  to  $1\frac{3}{8}$  inches in diameter by letter-ballot vote in 1891.*

5th. The standard positions for train-pipe cocks and dummy couplings are as shown on Plate XI.

*Revised, 1890, to show hand-brake wheels at left hand side of center as one faces end of car, in accordance with instructions of Executive Committee. No change made in detail parts.*

6th. The standard form and dimensions of brake beam, when Westinghouse beam is employed, are as shown on Plate XII. Brake beams for all present forms of freight cars must be capable of withstanding a load of 7,500 pounds at center without more than  $\frac{1}{16}$  inch deflection; where it is necessary to use stronger beams, they must be capable of withstanding a load of 15,000 pounds at center without deflecting more than  $\frac{1}{16}$  inch.

7th. The present standard Christie or Collin rubber to be maintained where independent brakes and rubbers are used.

At the Twenty-fourth Annual Convention, held at Old Point Comfort, Virginia, in 1890, the question was directed to be submitted to letter ballot whether the lateral angle of brake beam lever should be 40°. The question was so submitted, and more



than two-thirds of the votes cast were affirmative, resulting in the adoption of  $40^\circ$  as the standard angle, as noted on Plate XII.

At the Twentieth Annual Convention, held at Niagara Falls in 1886 (*see page 72 of the report for that year*), a resolution was adopted to submit the Christie brake-head and shoe, represented by Plate V, to a letter ballot for adoption as a standard. It was so submitted, and as more than two-thirds of the votes cast were in favor of such adoption, it is now one of the standards of the Association.

At a meeting of the Executive Committee, held on June 14, 1888, the Secretary was instructed to change the drawings of the standard Christie brake shoe in accordance with the patterns submitted by Mr. Snow at that meeting. These changes have been made so far as ribs are concerned, but no change has been made in essential measurements.

At a meeting of the Executive Committee, held in Buffalo, New York, September 17, 1890, the Secretary was instructed to print new cut of Christie brake head and shoe showing  $\frac{1}{8}$  inch clearance between head and shoe at central boss on shoe, and at both ends, by removal of metal from the shoe. Such changes have been made, and Plate V shows the present standard, with all essential measurements unaltered.

#### SCREW THREADS.

What is known as the Sellers' or Franklin Institute system of screw-threads, bolt-heads and nuts, was recommended as a standard at the Fifth Annual

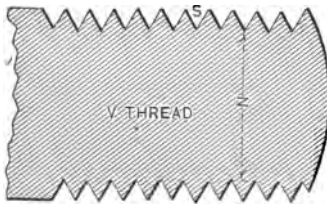


FIG. 11.  $\sim 55^\circ$  A



FIG. 13.  $\sim 60^\circ$  A



FIG. 15.

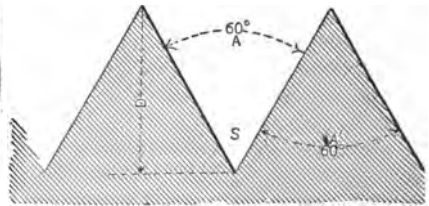


FIG. 12.

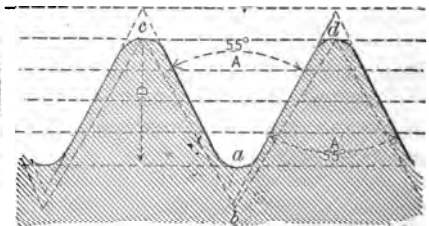


FIG. 14.

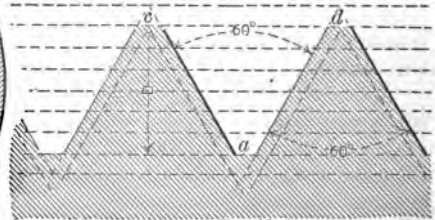


FIG. 16.

Convention held in Richmond Va., in 1872. (*See pages 18 and 21 of the report of that meeting. See also pages 82 and 83 of Report of Thirteenth Annual Convention.*)












This system was proposed by Mr. William Sellers, and was described by him in an essay read before the Franklin Institute of Philadelphia, April 21, 1864. In that essay the system is described as follows :

"The proportions for the proposed thread and its comparative relation to the sharp and rounded threads, will be readily understood from the accompanying diagram, in which Figs. 11 and 12 — the latter on an exaggerated scale — represent a sharp thread, Figs. 13 and 14 a rounded top and bottom to the English proportions, and Figs. 15 and 16 the flat top and bottom, all of the same pitch. The angle of the proposed thread is fixed at 60°, the same as the sharp thread, it being more readily obtained than 55°; and more in accordance with the general practice in this country. Divide the pitch, or which is the same thing, the side of the thread into eight equal parts, take off one part from the top and fill in one part in the bottom of the thread, then the flat top and bottom will equal one-eighth of the pitch; the wearing surface will be three-quarters of the pitch, and the diameter of screw at bottom of the thread will be expressed by the formula :

$$\text{Diameter} = \frac{1.299}{\text{number of threads per inch.}}$$

The accompanying tables are reprinted from Mr. Sellers' essay; they give the proportions of his standard screw-threads, nuts and bolt-heads.

## PROPORTIONS FOR SELLERS' STANDARD SCREW-THREADS, NUTS AND BOLTS.

SCREW-THREADS.				NUTS.				BOLT HEADS.			
Diameter of screw.	Threads per inch.	Diameter at root of thread.	Width of flat.	Short diameter rough.	Short diameter finish.	Thickness rough.	Thickness finish.	Short diameter rough.	Short diameter finish.	Thickness rough.	Thickness finish.
											
$\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{9}{16}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$	20 18 16 14 13 12 11 10 9 8 7 7 6 6 5 $\frac{1}{2}$ 5 5 4 $\frac{1}{2}$	.185 .240 .294 .344 .400 .454 .507 .620 .731 .837 .940 1.065 1.160 1.284 1.389 1.491 1.616 1.712	.0062 .0074 .0078 .0089 .0096 .0104 .0113 .0125 .0138 .0156 .0178 .0173 .0208 .0208 .0237 .0250 .0250 .0277	$\frac{1}{16}$ $\frac{3}{16}$ $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	$\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	$\frac{1}{16}$ $\frac{3}{16}$ $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	$\frac{1}{16}$ $\frac{3}{16}$ $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	$\frac{1}{16}$ $\frac{3}{16}$ $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$			

## PROPORTIONS FOR SELLERS' STANDARD NUTS AND BOLTS.



Rough Nut = one and one-half diameter of bolt +  $\frac{1}{16}$ .



Finished Nut = one and one-half diameter of bolt +  $\frac{1}{16}$ .



Rough Nut = diameter of bolt.



Finished Nut = diameter of bolt -  $\frac{1}{16}$ .



Rough Head = one and one-half diameter of bolt +  $\frac{1}{16}$ .



Finished Head = one and one-half diameter of bolt +  $\frac{1}{16}$ .



Rough Head = one-half distance between parallel sides of head.



Finished Head = diameter of bolt -  $\frac{1}{16}$ .

At the Sixteenth Annual Convention, held in Philadelphia in 1882 (*see page 229 of the report of that meeting*), it was

"Resolved, That this Association deprecates the use of screws larger or smaller in diameter by a small fraction of an inch than the sizes specified for the Sellers or Franklin Institute system, and that all the members of the Association are urged to abandon entirely the use of over or under size screws."

At the same meeting the Committee on Standard Screw Threads was instructed (*see page 229 of the report of the meeting*) "to procure a set of the unhardened gauges manufactured by the Pratt & Whitney Company, these to be kept among the archives of the Association as the standard of measurement of screw-threads and for ultimate reference in case of need." The committee was also instructed to get a standard two-foot rule.

The committee procured the screw gauges and rule and delivered them to the Association, at the adjourned meeting held at Niagara Falls in October, 1882, and these are now in the possession of the Secretary.

#### LIMIT GAUGES FOR ROUND IRON.

At the Seventeenth Annual Convention, held in Chicago in June, 1883, the following resolution was presented (*see pages 37 and 38 of the report of that meeting*):

"Resolved, That the following sizes for limit gauges for round iron for the Sellers' standard threads are hereby established by the Master Car-Builders' Association as the standard sizes for such gauges, and that it is recommended that round iron of the nominal standard sizes be made of such diameter that each one *will* enter the large or + end of the gauge intended for it, *in any way*, and will *not* enter the small or — end *in any way* :

SIZES OF LIMIT GAUGES FOR ROUND IRON.

NOMINAL DIAMETER OF IRON.—INCHES.	Large Size. + end. Inches.	Small Size. — end. Inches.	Total Variation. Inches.
$\frac{1}{4}$ .....	.2550	.2450	.010
$\frac{5}{16}$ .....	.3180	.3070	.011
$\frac{3}{8}$ .....	.3810	.3690	.012
$\frac{7}{16}$ .....	.4440	.4310	.013
$\frac{1}{2}$ .....	.5070	.4930	.014
$\frac{5}{8}$ .....	.5700	.5550	.015
$\frac{3}{4}$ .....	.6330	.6170	.016
$\frac{7}{8}$ .....	.7585	.7415	.017
1 .....	.8840	.8660	.018
1 $\frac{1}{8}$ .....	1.0095	.9905	.019
1 $\frac{1}{4}$ .....	1.1350	1.1150	.020
1 $\frac{3}{4}$ .....	1.2605	1.2395	.021 "

A motion to submit this resolution for decision by letter ballot was adopted. On submitting it to the members, more than two-thirds of the votes cast were in favor of the resolution (*see pages 116-118 of Seventeenth Annual Report*). It was, therefore, adopted, and the dimensions named are now the standard sizes of limit gauges for

round iron. Fig. 17 represents the form of caliper gauge that was proposed, and Fig. 18 shows a cylindrical gauge to be used for testing the size of the caliper gauges.\*



FIG. 18.



## DRAW GEAR.

### HEIGHT OF DRAWBARS.

At the Twenty-fourth Annual Convention held at Old Point Comfort, Virginia, in 1890, it was recommended that 35 inches from top of rail to center of drawbar when car is light be the standard for passenger equipment cars, which was subsequently confirmed as standard by letter-ballot vote.

At the same time the size, location and arrangement of the safety chains for passenger equipment cars as shown on plate 14 were adopted as standard, with all links made of  $\frac{7}{8}$  inch iron and  $1\frac{1}{2}$  inches wide inside.

The standard height for drawbars, which was recommended, or was intended to be recommended, at the Fifth Annual Convention, held in Richmond, Virginia, in 1872, is 2 feet 9 inches, measured perpendicularly from the tops of the rails to the center of the drawbar, when the car is empty. This is the present standard height for freight cars. (See pages 42, 43 and 46, of the original report of that meeting.† See also reports of Thirteenth Annual Convention, pages 108 and 109, and report of Eighteenth Annual Convention, page 30.)

### ATTACHMENTS OF DRAWBARS.

The method of attaching drawbars at their rear ends, shown in Figs. 19, 20 and 21, was recommended at the Tenth Annual Convention, held in New York in 1876 (see pages 65 and 70 of report of that meeting).

\*These gauges are manufactured by the Pratt & Whitney Company, of Hartford, Connecticut.

†There is evidently an error in the original report. It was Mr. Ford's amendment and not Mr. Myers' which was adopted. The standard height recommended was 2 feet 9 inches.—M. N. F., Secretary.

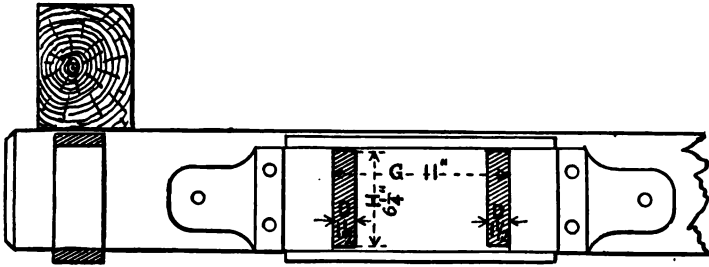


FIG. 19.

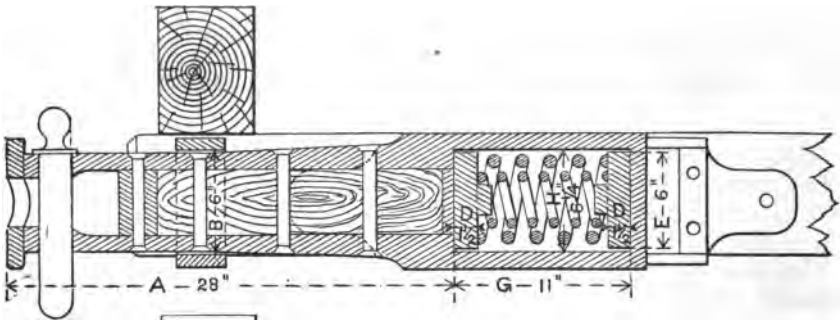
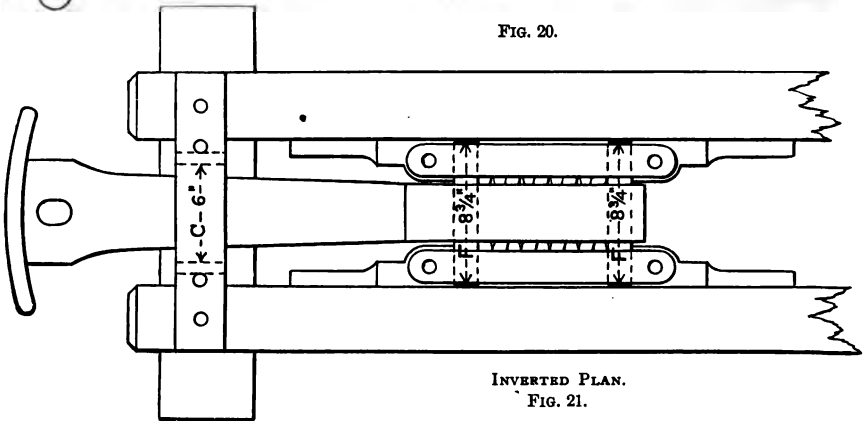


FIG. 20.

INVERTED PLAN.  
FIG. 21.

## DIMENSIONS OF DRAWBARS.

The following were recommended as standard dimensions for drawbars at the Thirteenth Annual Convention, held in Chicago in 1879.

The length *A* (see *Fig. 20*), from the end of head to the first follower-plate, to be 28 inches.

The depth (*B*) at outer yoke in carrying-plate to be 6 inches.

The width (*C*) of opening for drawbar, in the carrying plate or yoke, to be 6 inches.

The follower-plates to be made of wrought iron, and rectangular in form, the thickness (*D*) to be  $1\frac{1}{2}$  inches; width (*E*) 6 inches; and the length (*F*)  $8\frac{3}{4}$  inches.

The length (*G*) of the house of the drawbar to be 11 inches, and the width (*H*)  $6\frac{1}{4}$  inches.

The pin-hole in drawbar to be made so as to take pin 2 by  $1\frac{1}{2}$  inches and to be 4 inches from face of drawbar.

When a strap is used in back end of drawbar, it shall have a clear space of 11 inches long and  $6\frac{1}{4}$  inches wide. When a spindle is used, it shall be 2 inches diameter, 17 inches long from under side of head to outer edge of key; the key to be  $2\frac{1}{2}$  inches wide and  $\frac{1}{2}$  inch thick.

The drawbars to be so placed in the cars as to locate the coupling pins not less than five inches from the center to the face of the dead-woods.

#### AUTOMATIC COUPLERS.

At the Twenty-first Annual Convention, held in Minneapolis in 1887, it was agreed to submit to letter ballot the question whether "the Janney type of coupler shall be recommended as a standard form of coupling." (*See pages 199 and 208 of Twenty-first Annual Report.*)

This recommendation was submitted to letter ballot and was adopted. (*See pages 208, 243 and 253.*)

At the same meeting the Executive Committee was instructed to prepare a drawing of contour lines for the Master Car-Builders' standard automatic coupler. Such a drawing was prepared — of which Plate VI is a copy — and engravings of it were issued to members of the Association with a circular dated April 8, 1888.

At the Twenty-third Annual Convention, held at Saratoga in 1889, certain recommendations were made in regard to dimensions of Master Car Builders' type of coupler and of open space in carrier irons for same, as well as form of coupler at tail end. These recommendations were submitted to letter-ballot vote, as ordered by the Convention, and each recommendation had more than two-thirds of the votes cast in its favor, and was, therefore, adopted as a standard of the Association.

This action fixed 30 inches as the standard length of the Master Car-Builders' type of drawbar, when measured as indicated by 30 inches on Plate VII; it also fixed the standard size of neck of this drawbar back of the head at 5 by 5 inches; and it fixed the open space in carrier iron for same drawbar at  $5\frac{1}{2}$  inches horizontally and  $5\frac{3}{4}$  inches vertically, all of which are shown on same plate.

In addition to this standard length for Master Car-Builders' type of drawbar, another drawbar of same form and dimensions, except that the length is 28 inches, by making the barrel 2 inches shorter, was adopted for use only on cars already in service, when desired.

#### CAPACITY OF DRAW-SPRINGS.

At the Twenty-first Annual Convention (*see page 100 of the report*), it was recommended that the capacity of draw and buffer springs should not be less than 18,000 pounds.



## DEAD-BLOCKS.

Standard dimensions of dead-blocks were recommended at the Sixteenth Annual Convention, held in Philadelphia in 1882 (*see pages 45 and 47 of report of that meeting*). These dimensions were amended at the Eighteenth Annual Meeting, held in Saratoga, as follows :

Double dead-blocks are to be made 8 inches square on the face and 6 inches thick, and are to be placed 22 inches apart from center to center and to have 14 inches space between them.

Single dead-blocks are to be not less than 30 inches long, 7 inches thick and 8 inches deep, measured vertically.

By order of the Executive Committee the amendments were submitted for the approval of the members by letter ballot (*see pages 156-162 of the Eighteenth Annual Report*), and as more than two-thirds of the votes cast were in favor of the amendments, they were adopted.

At the Twentieth Annual Convention, held at Niagara Falls in 1886, it was agreed (*see page 48 of report of that year*) to submit the following recommendations for decision by letter ballot : "That when double dead-blocks are used, their vertical height and their width, measured crosswise to the track, be each 8 inches, and their thickness, measured lengthwise to the track, be 6 inches ; that they each consist of a casting as represented by Figs. 22-24."

"That when a beam, attached to the end sill, is used for carrying the dead-blocks, it be made 36 inches long, not less than 4 inches thick and 8 inches vertical depth."

These recommendations were submitted to letter ballot and were adopted. (*See pages 183 and 184.*) Figs. 25 and 26 represent the present standards for double and single dead-blocks.

## TRAIN-PIPE FITTING FOR STEAM HEAT.

At the Twenty-fourth Annual Convention, held at Old Point Comfort, Virginia, in June, 1890, it was decided that a standard fitting on ends of train pipe for steam heat should be a 2-inch female fitting with standard pipe thread. The question was submitted to letter-ballot vote, as ordered by the Convention, and more than two-thirds of the votes cast were affirmative. This is therefore a standard of the Association.

FIG. 22.

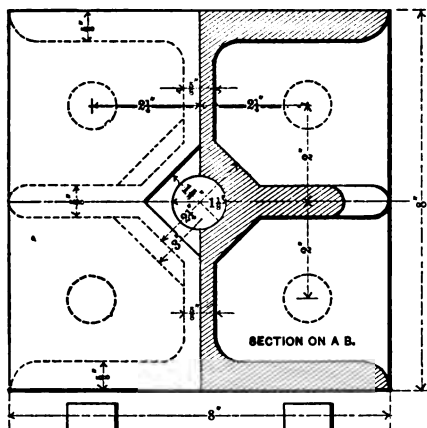
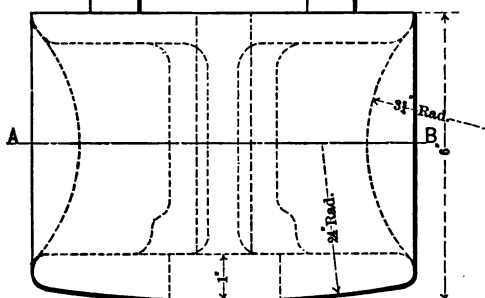
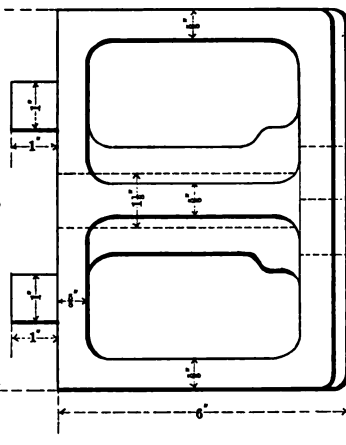


FIG. 23.



Standard Casting for Double Dead-blocks.

FIG. 24.

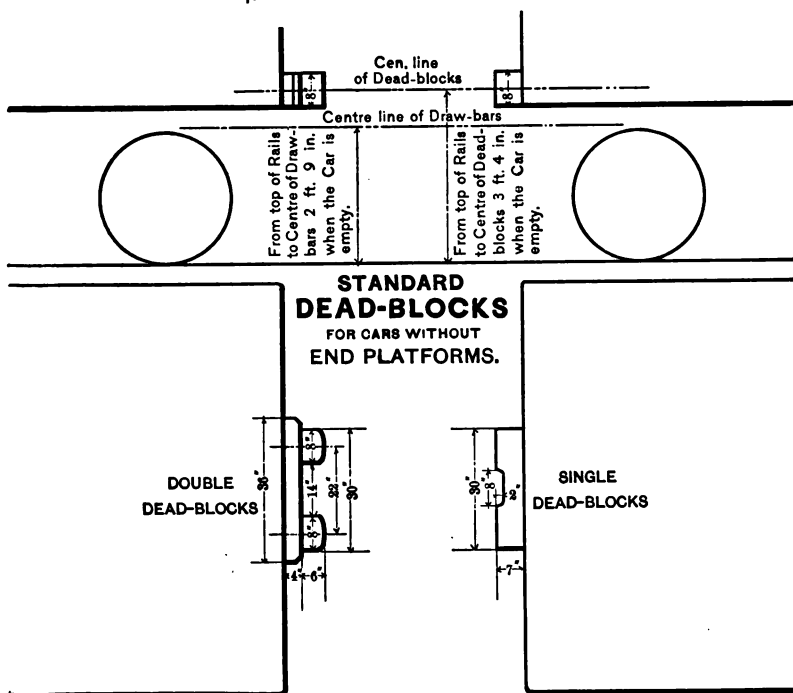


FIG. 25.

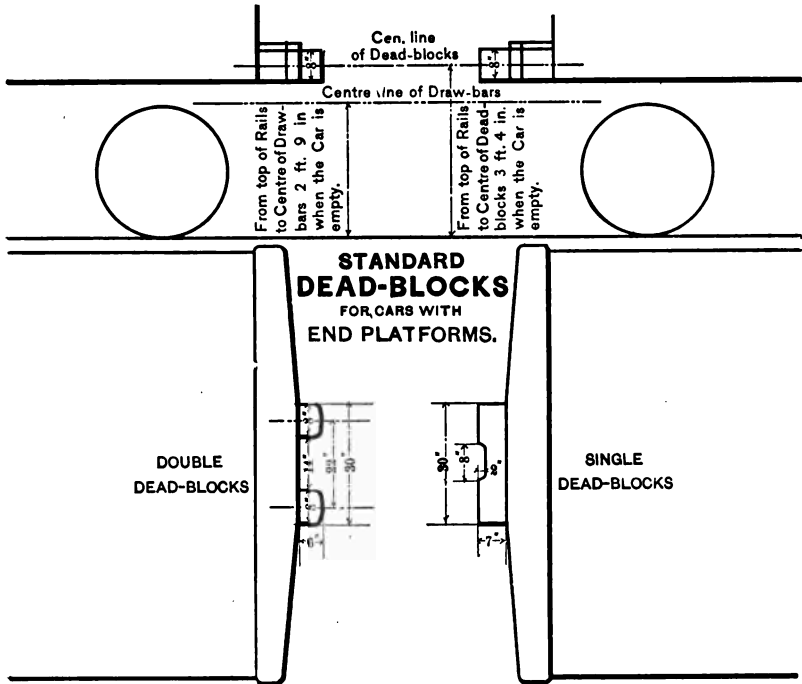


FIG. 26.

### PROTECTION OF TRAINMEN FROM ACCIDENTS.

At the Thirteenth Annual Convention, held in Chicago in 1879, the following resolutions, having reference to the construction of the attachments to cars for the protection of trainmen from accidents, were adopted:

The attachments referred to are shown in Figs. 27 and 28.

#### POSITION OF BRAKE-SHAFTS.

(See pages 25 and 123 of *Twenty-second Annual Report*.)

The brake-shaft to be placed on what is the left-hand corner of the car when a person is standing on the track facing the end of the car. The ratchet wheel and brake-pawl to be fastened to a suitable casting attached to the roof. A railing or guard to be attached to the end and the roof of the car around the brake-shaft. The center of the brake-shaft to be 20 inches from the middle of the car, the nuts on the ends of the brake-shafts to be secured by split spring cotters.

Fig. 27 shows the brake-shaft in the position designated.

#### BRAKE-STEPS OR PLATFORM AND FASTENING OF BRAKE RATCHET-WHEEL AND PAWL.

(See pages 109 and 119 of *Thirteenth Annual Report*.)

"That the small platform placed at one end of freight cars, to fasten the brake-pawl, etc., be discontinued, the ratchet-wheel and pawl to be fastened to a suitable casting on the roof."

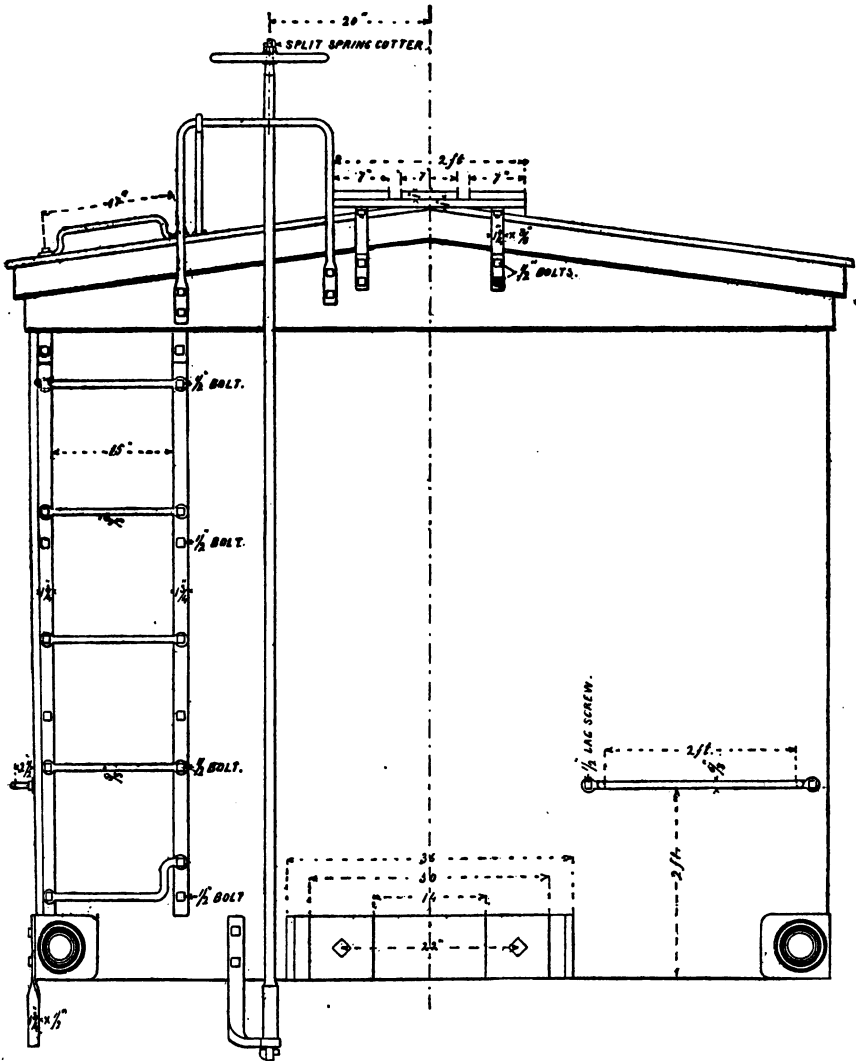


FIG. 27.

### ATTACHMENTS FOR THE SAFETY OF TRAINMEN.

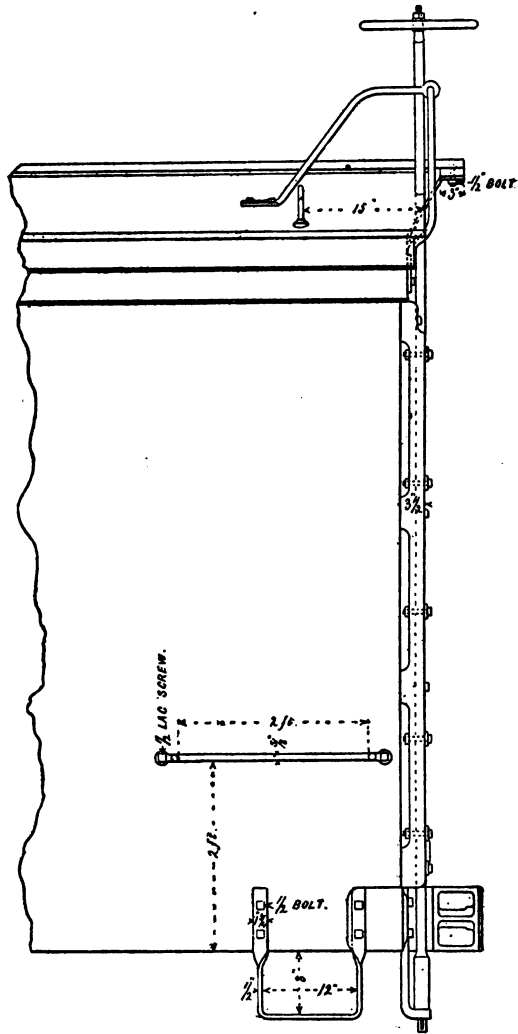


FIG. 28.

ATTACHMENTS FOR THE SAFETY OF TRAINMEN.

## RUNNING-BOARDS.

(See pages 24 and 123 of *Twenty-second Annual Report*.)

The ends of the running-boards of box cars to be made to project over the ends of the cars, so that the *minimum* distance between the ends of those on adjoining cars will not be over 12 inches; and that the running-boards be made not less than two feet wide, and made of three boards 7 by 1 inch. The projecting ends to be supported on two brackets, at each end of the car, made of  $\frac{3}{8}$  by  $1\frac{1}{4}$ -inch iron, with a hardwood cleat 3 by 1 inch on upper ends, fastened with one  $\frac{1}{2}$ -inch bolt and nut in each bracket. The lower end of each bracket to be fastened to the end of the car with two  $\frac{1}{2}$ -inch bolts and nuts. (See Figs. 27 and 28.)

## STEPS.

(See pages 25 and 121 of *Twenty-second Annual Report*.)

Two good substantial steps, to be made of wrought iron of  $\frac{1}{2}$  by  $1\frac{3}{4}$  inches section, to be fastened one to each side sill, next to the corner of the car to which the ladder is attached. The steps to be not less than 12 inches long, measured horizontally between the sides, and the tread to be not less than 8 inches below the bottom of the sill. The side of the step next to the corner of the car to be as near to the end of the car as is practicable. Each side of the step to be fastened to the sill with two  $\frac{1}{2}$ -inch bolts and nuts. (See Figs. 27 and 28.)

A hand-hold to be attached to the side of the car above each step—to be placed horizontally two feet above the bottom of the sills. The hand-hold to be made of  $\frac{3}{8}$ -inch round iron, 2 feet long in the clear between the ends; to have  $2\frac{1}{2}$  inches clear space between it and the sides of the car; to be fastened with one  $\frac{1}{2}$ -inch lag screw in each end, screwed not less than two inches into the framing. Another handle of the same size, and fastened in the same way, to be attached horizontally to the end of the car the same distance above the sills, and on the opposite side of the ladder. (See Fig. 28.)

## LADDER AND HANDLES.

(See pages 109, 110 and 111 of *Thirteenth Annual Report*.)

"That each box and stock car have two ladders, not less than five steps in each ladder, made of  $\frac{5}{8}$ -inch round iron, projecting  $3\frac{1}{2}$  inches from the siding, securely fastened to each end at diagonal corners, with a handle directly over the ladders on the roof.

"Mr. C. E. Gary moved that the lower steps of the ladder have a guard or projection in order to prevent men slipping when swinging around the end of the car to get on the step.

"The recommendation as amended was adopted."\* (See Figs. 27 and 28.)

\* In a report on the Causes of Accidents to Trainmen, made in 1883 (see page 28), it was recommended by the committee that "when ladders are on the end of the car a handle be placed horizontally about 24 inches above the lower edge of sill on side of car above the steps to enable trainmen to get a firm hold before or while using the steps; also when the ladder is on end of car a handle should be placed on opposite corner from the ladder, and when ladders are on the side of car, two such handles should be placed on each end of the car about 24 inches above the bottom of sill, thus enabling train and yardmen to sustain themselves while making couplings, and which would be vastly beneficial should they stumble or otherwise lose their footing."

This report was "received" by the Association, but no other action was taken regarding the attachments which were recommended by the committee, and are shown in Figs. 27 and 28.

## CHECK-CHAINS.

At the Eighth Annual Convention, held in Cincinnati in 1874, the following resolution was adopted (*see pages 27 and 72 of report of that meeting*) :

“*Resolved*, That truck and car-body check-chains are, when properly applied, a valuable acquisition on passenger equipment, and your committee recommends their general use.”

## LOADING LOGS, POLES AND BARK ON CARS.

At the Twenty-fourth Annual Convention, held at Old Point Comfort, Va., in 1890, plans were submitted for loading logs and poles on cars and for racking cars for loading bark. These were approved and ordered to be submitted to letter-ballot vote. The result of such vote was the adoption as standard of the Association of the plans shown on Plate 13 for loading logs and poles on cars, and for racking cars for loading bark.

## MARKING CARS.

A resolution was adopted at the Sixteenth Annual Convention (*see page 158 of report*), requesting all railroad companies whose initials are the same as those of other railroad companies to stencil the name of the road in full on some part of the car where it can readily be seen by freight agents.

SYSTEM OF LETTERING AND NUMBERING FAST FREIGHT  
LINE CARS.

At the Eighteenth Annual Convention, held in Saratoga (*see page 96 of the report of that meeting*), the following resolutions were adopted, which, with Figs. 29, 30 and 31, described a proposed system of lettering and numbering “Fast Freight Line” cars :

1st. The half of sides of car on which the doors do not slide, to show the name of the “Fast Freight Line” (spelled out in full) and the car number (in the Fast Freight Line series) immediately below it. In the same panel and within two feet of the sill shall appear (in letters not over four inches high) the name of the railroad company owning or contributing the car, and between the same and the sill shall appear the light weight of the car, with such other information as it is found advisable to give in connection with same.

2d. The doors shall have no marks whatever.

3d. The ends to show the initials of the “Fast Freight Line” with the car number (in the Fast Freight Line series) and the light weight just below them ; no other marks will appear on ends of car.

4th. The half sides of cars on which the doors do slide, to be reserved for advertising symbols or trade-marks where used. The use of profuse lettering in this panel is to be discouraged, however, and it is recommended that only the simplest trade-marks or advertising signs shall be used ; the capacity of the car to appear near the sill in this same panel.

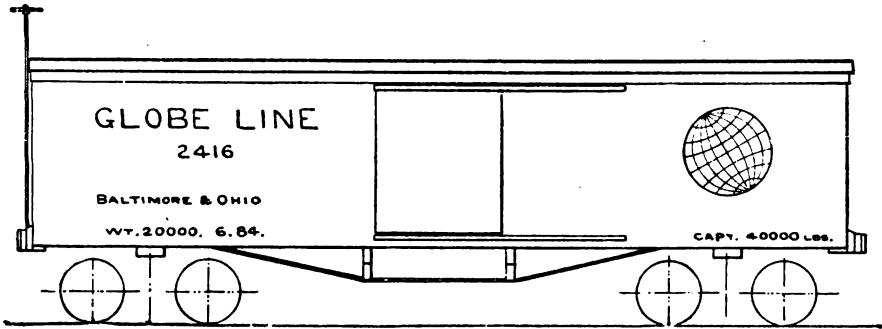


FIG. 29.  
CARS IN FAST FREIGHT LINE SERVICE.

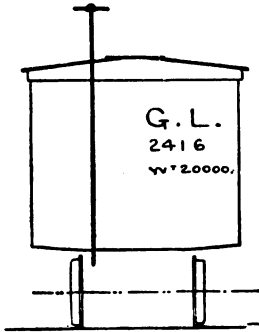


FIG. 30.

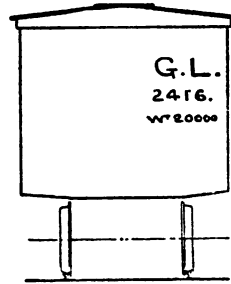


FIG. 31.

At the meeting referred to it was decided to refer these resolutions for the decision of the members by letter ballot. In accordance with this action they were so referred (*see pages 156-162 of the Eighteenth Annual Report*), and as more than two-thirds of the votes cast were in favor of the resolution, they, and the system they described, are adopted as a standard by the Association.

#### STORING OF LINE CARS ON FOREIGN ROADS.

At the Seventeenth Annual Convention, held in Chicago in June, 1883, the following resolutions were adopted (*see page 109 of the report of that meeting*):

"Whereas, It is a common practice to store line cars on side tracks during summer months or dull times away from home, after they have been in severe service; and

"Whereas, Many of the cars after being so stored are found to be more or less out of proper condition, so that they need more or less repairs, and when put into service cause much detention to traffic and many transfers;

"Be it Resolved, therefore, That it is the sense of this meeting that all line cars owned by foreign companies should be returned to their owners instead of being stored on foreign tracks, and that a competent man should be detailed to inspect the



stored cars and to arrange to have the necessary repairs made during the time such cars are out of service."

#### DICTIONARY OF TERMS.

At the Fifth Annual Convention, held in Richmond, Va., in 1872 (*see page 18 of report of that meeting*), it was

"*Resolved*, That a committee be appointed with power to publish an illustrated book, defining the proper terms or names of each and every part used in the construction of railway cars, and a description of the use of the same."

At the Fourteenth Annual Convention, held in Detroit in 1880 (*see pages 11 to 20 of report of that meeting*),

"The committee to whom was assigned the duty of preparing a dictionary of terms used in the construction of cars, submitted a copy of the book and reported that they had finished their work, and they were discharged."

#### ENTERTAINMENTS.

At the Ninth Annual Convention, held in New York in 1875, the following resolution was adopted (*see page 113 of report of that meeting*):

"*Whereas*, The practice of entertaining the members of this Association by its friends has become an established custom, and has thus assumed somewhat the character of an obligation to which those who have so generously dispensed hospitality have in a measure felt themselves obliged to conform; and

"*Whereas*, The expenditure of time and money for this purpose has in many cases been very much greater than the members of this Association have a right to expect should be devoted to their enjoyment; and

"*Whereas*, The expense of such hospitality has in some cases been interpreted as having a significance which has been the cause of embarrassment to members:

"*Therefore*, We desire by this resolution, first, to express our thanks for the liberality of our friends in the past; and, secondly, to make the request in this public way that in the future there shall be no more expenditure of money for the public entertainment of members of this Association."

The preamble and resolution were unanimously adopted.

# CONSTITUTION AND BY-LAWS

## OF THE

# MASTER CAR-BUILDERS' ASSOCIATION.

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### ARTICLE I.

#### NAME.

SECTION 1. The name of the Association shall be "The Master Car-Builders' Association."

### ARTICLE II.

#### OBJECTS AND LIMITS OF ACTION.

SECTION 1. The objects of this Association shall be the advancement of knowledge concerning the construction, repair and service of railroad cars, by discussions in common, investigations and reports of the experience of its members; to provide an organization through which the members, and the companies they represent, may agree upon such joint action as may be required to bring about uniformity and interchangeability in the parts of railroad cars, to improve their construction and to adjust the mutual interest growing out of their interchange and repair; but the action of the Association shall have only a recommendatory character, and shall not be binding upon any of its members or the companies represented in it.

### ARTICLE III.

#### MEMBERSHIP.

SECTION 1. There shall be three classes of members,—Active, Representative and Associate Members. Each member must sign the Constitution or authorize the Secretary to sign for him.

SEC. 2. Any person holding the position of Superintendent of the Car Department, Master Car-Builder, Foreman of a Railroad Car Shop, Joint Car Inspector, or one representative from each Car Manufacturing Company, or other company owning over one thousand cars, which are not in process of purchase by other parties, may become an Active Member by paying his dues for one year. Unless expelled from the Association his membership shall continue until his written resignation is received by the Secretary.

SEC. 3. Any person having a practical knowledge of car construction may become a Representative Member by receiving a *written* appointment from the President, General Manager or General Superintendent of any railroad company to represent its interests in the Association, provided that no Representative Member shall represent more than one railroad or system of roads under one General Manager or General Superintendent. Such Member shall have all the privileges of an Active Member, including one vote on all questions, and in addition thereto shall, on all measures pertaining to the adoption of standards or the expenditure of money, have

one more vote for each full one thousand cars which are owned, or which are in use and in process of purchase, by the road or system which he represents. His membership shall continue until notice is given the Association of his withdrawal, or of the appointment of his successor. No railroads or system of roads, under one General Manager or General Superintendent, shall have more than one Representative Member. In the enumeration of four, six, eight or more wheeled cars, four axles to count as one car.

SEC. 4. Civil and mechanical engineers, or other persons having such a knowledge of science, or practical experience in matters pertaining to the construction of cars as would be of especial value to the Association or railroad companies, may become Associate Members on being recommended by three members not associates. The names of such candidates shall then be referred to the Executive Committee, which shall report to the Association on their fitness for such membership. They shall be elected by ballot at any regular meeting of the Association, held not less than six months after a candidate has been proposed, and five dissenting votes shall reject. The number of Associate Members shall not exceed twenty. Associate Members shall be entitled to all the privileges of Active Members, excepting that of voting and being elected to office in the Association.

SEC. 5. Any member who, during the meetings of the Association, shall be guilty of dishonorable conduct which is disgraceful to a railroad officer and a member of the Association, or shall refuse to obey the Chairman when called to order, may be expelled by a vote of two-thirds of the members present at any meeting held within one year from the date of the offence.

#### ARTICLE IV.

##### OFFICERS.

SECTION 1. The officers of the Association shall be a President, three Vice-Presidents, a Treasurer, Secretary, and six Executive Members. The six Executive Members, with the President, Vice-Presidents and Treasurer, shall constitute the Executive Committee.

#### ARTICLE V.

##### DUTIES OF OFFICERS.

SECTION 1. The duties of all officers shall be such as usually pertain to their offices, or may be delegated to them by the Executive Committee of the Association.

#### ARTICLE VI.

##### EXECUTIVE COMMITTEE.

SECTION 1. The Executive Committee shall exercise a general supervision over the interests and affairs of the Association, recommend the amount of the annual assessment, to call, to prepare for and to conduct general conventions, and to make all necessary purchases, expenditures and contracts required to conduct the current business of the Association, but shall have no power to make the Association liable for any debt to an amount beyond that which at the time of contracting the same shall be in the Treasurer's hands in cash, and not subject to prior liabilities. All expenditures for special purposes shall only be made by appropriations acted upon by the Association at a regular meeting.

SEC. 2. The Executive Committee shall make a report of the proceedings of each of its meetings, such reports to be made accessible to all the members of the Association. It shall have the proceedings of the regular meetings of the Association published, subject to instructions from the latter. It shall have power to withhold from the published proceedings papers and reports containing old matter readily found elsewhere, those specially meant to advocate personal interests, those carelessly prepared or controverting well-established facts, and those purely speculative or foreign to the purposes of the Association, or any which in the opinion of the committee are unworthy of publication; it being understood, though, that this discretion shall always be exercised subject to the action of the Association.

SEC. 3. Two-thirds of the members of the Executive Committee may call special meetings of the Association, to be held not less than thirty days after a notice thereof has been mailed to each member of the Association.

SEC. 4. Five members of the Executive Committee shall constitute a quorum for the transaction of business.

## ARTICLE VII.

### ELECTION AND APPOINTMENT OF OFFICERS AND TENURE OF OFFICE.

SECTION 1. The officers, excepting as otherwise herein provided, shall be elected at the regular meeting of the Association, held in June of each year, and the election shall not be postponed excepting by unanimous consent.

#### PRESIDENT AND TREASURER.

SEC. 2. The President and Treasurer shall be elected by written ballots by a majority of the votes cast, and shall hold office for one year, or until successors are chosen.

#### VICE-PRESIDENTS AND EXECUTIVE MEMBERS.

SEC. 3. The Vice-Presidents shall hold office for one year, and Executive Members for two years, or until successors are chosen. Three Vice-Presidents and three Executive Members to be elected each year; provided, however, that three of the latter shall be appointed by the President holding office at the time of the adoption of this amendment. The Executive Members thus appointed to hold office until successors are chosen at the annual meeting following.

SEC. 4. In the election of Vice-Presidents each Active and Representative Member may cast as many votes as there are Vice-Presidents to be elected. The number of votes may be given to one candidate or distributed among more, as the person entitled to cast them may choose. Executive Members shall be voted for in the same way. The three candidates for each of the offices named who receive the largest number of votes shall be declared elected.

#### SECRETARY.

SEC. 5. A Secretary, who may or may not be a member of the Association, shall be appointed by a majority of the Executive Committee at its first meeting after the

annual election, or as soon thereafter as the votes of a majority of the members of the Executive Committee can be secured for a candidate. The term of office of the Secretary thus appointed, unless terminated sooner, shall cease at the first meeting, after the next annual election succeeding his appointment, of the Executive Committee organized for the transaction of business. Two-thirds of the members of the Executive Committee shall, however, have power to remove the Secretary at any time. His compensation, if any, shall be fixed for the time that he holds office by a vote of a majority of the Executive Committee. He shall also act as Secretary of the Executive Committee.

#### TREASURER.

SEC. 6. The Treasurer shall be required to give bonds to an amount which a majority of the members of the Executive Committee demand. No bill shall be paid by him for the Association, excepting for current expenses, until it has been certified by the person or persons authorized to contract it, and audited by the Executive Committee.

### ARTICLE VIII.

#### COMMITTEES.

SECTION 1. At the first session of the annual meeting the President shall appoint a Nominating Committee of five members, who are not officers of the Association, and this committee shall send the names of nominees for officers of the Association to fill vacancies for the ensuing year to the Secretary before the election of officers is in order, and they shall be announced by him as soon as received. The election shall not be held until the day after such announcement, excepting by unanimous consent. Any three other members may nominate candidates for any office.

#### AUDITING COMMITTEE.

SEC. 2. At the first session of each annual meeting an Auditing Committee, consisting of three members not officers of the Association, to be nominated by any member who does not hold office, shall be elected in the same way as Vice-Presidents and Executive Members are voted for. This Auditing Committee shall examine the accounts and vouchers of the Treasurer and certify whether they have been found correct or not. After the performance of this duty they shall be discharged by the acceptance of their report by the Association.

#### COMMITTEE ON SUBJECTS FOR INVESTIGATION AND DISCUSSION.

SEC. 3. At each annual meeting the President shall appoint a committee whose duty it shall be to report at the next annual meeting subjects for investigation and discussion, and if the subjects are approved by the Association, the President, as hereinafter provided, shall appoint committees to report on them. It shall also be the duty of the committee to receive from members questions for discussion during the time set apart for that purpose. This committee shall determine whether such questions are suitable ones for discussion, and if so, they shall so report them to the Association.

#### COMMITTEES OF INVESTIGATION.

SEC. 4. When the Committee on Subjects has reported and the Association approved of subjects for investigation, the President shall appoint special committees

to investigate and report on them, and he may be authorized to appoint a special committee to investigate and report on any subject which a majority of the members present may approve of.

## ARTICLE IX.

### THE RECOMMENDATION OF STANDARDS.

SECTION 1. Any proposition recommending the adoption of standard construction or practice shall be in writing and be accompanied by drawings if the latter are necessary for a clear understanding of the subject. Such proposition shall then be submitted to the Association for discussion, after which a vote shall be taken to decide whether the proposition shall be submitted for decision by letter ballot to all the members entitled to vote. If decided in the affirmative the Secretary, within three months from the time the vote of the Association is taken on such measure, shall send by mail to each member a blank ballot, and a copy of the proposed recommendation, with a report—to be approved by the Executive Committee—of the discussion thereon. Such ballot to be filled up, signed and remailed to the Secretary, who shall count all the ballots received within sixty days from the date that they were sent to members, and he shall then announce the vote in such manner as the Executive Committee may prescribe. Any recommendation securing two-thirds of the votes cast shall be adopted by the Association.

SEC. 2. All reports, resolutions and recommendations involving the use, or proposed use, by railroad companies, of any device or process which forms the subject matter of any existing patent, shall first be submitted to the Executive Committee, and shall be submitted to the Association only by the Executive Committee.

## ARTICLE X.

### ANNUAL CONTRIBUTIONS.

SECTION 1. Every member will be subject to the payment of annual dues, to be assessed at each annual meeting, to defray the necessary expenses of the Association, provided that no assessment shall exceed eight dollars. Each Representative Member shall pay, in addition to his own dues so assessed, the same amount for each additional vote to which he is entitled.

Such dues shall be payable when the amount thereof is announced by the President at each annual meeting, and no member who is one year in arrears shall be entitled to a voice in the Association. The name of any member who is three years in arrears for dues may be struck from the list of members at the discretion of the Executive Committee.

## ARTICLE XI.

### AMENDMENTS.

SECTION 1. This Constitution may be amended at any regular meeting by a two-thirds vote of the members present, *provided* that written notice of the proposed amendment has been given at a previous meeting at least six months before.

## BY-LAWS.

### TIME OF MEETING.

I. The regular meeting of the Association shall be held annually on the second Wednesday in June.

### HOURS OF SESSION.

II. The regular hours of session shall be from 10 o'clock A. M. to 2 o'clock P. M.

### PLACE OF MEETING.

III. The place for each annual meeting shall be fixed at least six months before the date for the annual meeting, by a committee consisting of the President, three Vice Presidents, and the Secretary, acting jointly with a committee of the American Railway Master Mechanics' Association.

### QUORUM.

IV. At any regular meeting of the Association fifteen or more members entitled to a vote shall constitute a quorum.

### ORDER OF BUSINESS.

V. The business of the meetings of the Association shall, unless otherwise ordered by vote, proceed in the following order :

- 1st. Calling the roll.
- 2d. Reading the minutes of the last meeting.
- 3d. Address by the President.
- 4th. Admission of new members.
- 5th. Reports of Secretary and Treasurer.
- 6th. Assessment and announcement of annual dues.
- 7th. Appointment of Nominating and other committees.
- 8th. Election of Auditing Committee.
- 9th. Unfinished business.
- 10th. New business.
- 11th. Reports of committees.
- 12th. Reading and discussing questions propounded by members.
- 13th. Routine and miscellaneous business.
- 14th. Election of officers.
- 15th. Adjournment.

### RULES GOVERNING THE CONDITION OF, AND REPAIRS TO, FREIGHT CARS FOR THE INTERCHANGE OF TRAFFIC.

VI. The Revision of the Rules of Interchange shall be the special order of business at 10 o'clock A. M. on the second day of each annual convention, unless otherwise ordered.

## QUESTIONS FOR DISCUSSION, SPECIAL ORDER OF.

VII. Unless otherwise ordered the discussion of questions proposed by members shall be the special order at 12 o'clock M. of each day of the annual meeting.

## DECISIONS.

VIII. The votes of a majority of the members present shall be required to decide any question, motion or resolution which shall come before the Association, unless otherwise provided.

## DISCUSSIONS.

IX. No questions or discussions as to the regulation of wages, or the amount to be paid by the day, week or month, or the number of hours that shall constitute a day's work of employés, shall be allowed at the meetings of this Association.

X. No patentees or their agents shall be admitted in the meetings of the Association for the purpose of advocating the claims of any patent or patentee, unless by unanimous consent.

XI. No member shall speak more than twice in the discussion of any question until all the other members who want to speak and have not been heard have spoken.



## Obituary.

### DAVID C. RICHARDSON.

DAVID CUMMINGS RICHARDSON was born in Andover, Massachusetts, August 15, 1825. He attended the public schools and Phillips Academy in his native town. When a boy he showed a decided taste for mechanics, but for a time his attention was directed towards the sea and he made two voyages, one to St. Petersburg, the other to the West Indies.

Always loyal to his parents and their wishes, he gave up the life on ship-board, which he very much enjoyed, and became a carpenters' apprentice to Mr. Jacob Chickering, in Andover.

Soon after his apprentice years were ended, he entered the Boston & Maine Railroad car shops, then located in Andover. He was a rapid and accurate workman and bent on thoroughly understanding every department of the business, and after the works were moved to South Lawrence he was advanced to the position of foreman, under Mr. Andrews, the Master Car-BUILDER.

From 1851 to 1852 he was employed as foreman in the Concord Railroad shops, but in 1852, at the solicitation of Mr. Andrews, and on account of the failing health of his father, and the advancing age of both of his parents, he returned to the Lawrence shops, in order that he might be near them. Never a week passed till they died, that he failed to visit them in their Andover home.

In 1866 he was appointed Master Car-BUILDER of the Boston & Maine system, with his office at Lawrence, which position he held until March, 1890, when he resigned, owing to failing health. He died at his home in Lawrence, December 6, 1890.

His connection with the Boston & Maine, combined with an even temperament and genial disposition, endeared him to a large circle of friends, and his loss was keenly felt.

He became a member of the Master Car-Builders' Association in 1882, where he was well known and universally esteemed. He was also a member of the Phœnician Lodge of Masons in Lawrence.

Mr. Richardson left two sons and a daughter who reside at Newtonville, Massachusetts.

J. W. MARDEN, } *Committee.*  
J. T. CHAMBERLAIN, }

# SUBJECTS AND COMMITTEES

FOR

CONVENTION, JUNE, 1892.

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## 1.—*Joint Inspection.*

To prepare a supplementary set of interpretations and illustrations of the Rules of Interchange.

A. M. WAITT.  
H. C. McCARTY.  
F. D. ADAMS.  
WM. GARSTANG.  
JOSEPH TOWNSEND.  
J. T. CHAMBERLAIN.  
D. W. HUNTER.

## 2.—*Air-Brake and Signal Instructions.*

To review the instructions proposed at last convention

E. W. GRIEVES.  
R. D. WADE.  
J. L. GREATSINGER.

## 3.—*Cast-Iron Wheels.*

To investigate what improvements are being made in the manufacture of wheels, so as to secure greater uniformity in quality, in depth of chill and in distribution of metal for proper balance.

GEO. W. WEST.  
W. H. THOMAS.  
JOHN PLAYER.

## 4.—*Freight Car Truck Frames.*

To report upon the relative advantages of swinging and rigid bolsters, and upon the Fox Pressed Steel Truck as compared with the prevalent forms of freight car trucks.

G. F. WILSON.  
W. S. MORRIS.  
W. F. TURREFF.

5.—*M. C. B. Automatic Coupler Standards and Limits.*

To consider the standard measurements, and whether any additional or other measurements are desirable as standard, and to report upon proper limits of variation to be allowed from standard measurements.

J. S. LENTZ.  
C. A. SCHROYER.  
J. M. WALLIS.

6.—*Steam Heating and Ventilation of Passenger Equipment Cars.*

To report upon the general progress and the efficiency of different systems, and to present drawings for a proposed standard location of ends of train pipe, and a proposed standard connection in detail for a union between the hose and pipe, so that one style of coupling may be readily removed and another substituted in its place.

J. N. BARR.  
J. C. BARBER.  
W. H. LEWIS.  
T. A. BISSELL.  
J. W. MARDEN.

7.—*Steel-Tired Car Wheels.*

To report upon relative merits of solid cast and wrought centers, and of plate centers bolted to hubs and tires.

R. E. MARSHALL.  
J. O. PATTEE.  
C. H. CORY.

8.—*Wheel Guarantee.*

To consider the communication from the Wheel Manufacturers' Association, read at last convention, and to report with recommendations.

J. J. HENNESSEY,  
THOMAS SUTHERLAND.

9.—*Steel Plate and Malleable Iron in Car Construction.*

To recommend a standard for stake pockets, and a method in detail for attaching to cars. Also to recommend standards for center plates, in detail, showing one for iron transoms and one for wooden transoms. Drawings and models to accompany the report.

WM. FORSYTH.  
JOHN MACKENZIE.  
E. D. BRONNER.

10.—*Standards of the Association.*

To consider the standards already adopted by the Association, and recommend what measures are expedient to secure their general adoption and use.

R. H. SOULE.  
E. CHAMBERLAIN.  
WM. MCWOOD.

11.—*Metal for Brake Shoes.*

G. W. RHODES.  
E. B. WALL.  
GEO. GIBBS.

**LIST OF OFFICERS AND MEMBERS**  
**OF THE**  
**MASTER CAR-BUILDERS' ASSOCIATION.**

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**OFFICERS FOR 1891-92.**

**PRESIDENT.**

**JOHN KIRBY**, Lake Shore & Michigan Southern Railroad, Cleveland, Ohio.

**VICE-PRESIDENTS.**

**E. W. GRIEVES**, Baltimore & Ohio Railroad, Baltimore, Md.

**JOHN S. LENTZ**, Lehigh Valley Railroad, Packerton, Pa.

**T. A. BISSELL**, Wagner Palace Car Co., Buffalo, N. Y.

**TREASURER.**

**G. W. DEMAREST**, Northern Central Railway, Baltimore, Md.

**EXECUTIVE MEMBERS.**

\***R. C. BLACKALL**, Delaware & Hudson Canal Co., Albany, N. Y.

\***E. CHAMBERLAIN**, New York Central & Hudson River Railroad, Buffalo, N. Y.

\***F. D. CASANAVE**, Pennsylvania Company, Fort Wayne, Ind.

†**J. W. MARDEN**, Fitchburg Railroad, Boston, Mass.

†**J. N. BARR**, Chicago, Milwaukee & St. Paul R'y, Milwaukee, Wis.

†**W. H. DAY**, Wilmington, Columbia & Augusta Railroad, Florence, S. C.

**SECRETARY.**

**JOHN W. CLOUD**, 974 Rookery, Chicago, Ill.

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\* Term of office expires June, 1893.

† Term of office expires June, 1892.

## LIST OF MEMBERS.

*The names of Active members are printed in Roman type, Representative members in Italics and Associate members in Small Capitals.*

Date of becoming member.	NAME.	RAILROAD COMPANY.	NO. OF CARS OWNED.	ADDRESS.
1882	<i>Adams, F. D.</i> . . . .	<i>Boston &amp; Albany</i> . . . . .	6,800	<i>Allston, Mass.</i>
1890	<i>Agnew, J. H.</i> . . . .	<i>South Carolina</i> . . . . .		<i>Charleston, S. C.</i>
1886	<i>Ames, La Mott</i> . . . .	<i>Beech Creek</i> . . . . .	1,332	<i>Jersey Shore, Pa.</i>
1889	<i>Anderson, Thos.</i> . . .	<i>Pittsburgh &amp; Western</i> . . . .	6,541	<i>Allegheny, Pa.</i>
1889	<i>Anderson, Geo. T.</i> . .	<i>Madison Car Co</i> . . . . .		<i>Madison, Ill.</i>
1887	<i>Appa, Wm.</i> . . . . .	<i>Atlanta &amp; West Point, Western of Alabama and Cin., Selma &amp; Mobile</i> . . . . .	1,000	<i>Montgomery, Ala.</i>
1887	<i>Augustus, Willis</i> . . .	<i>Keokuk &amp; Western</i> . . . . .	960	<i>Centreville, Ia.</i>
1867	<i>Baker, David H.</i> . . .	<i>Pennsylvania</i> . . . . .		<i>Jersey City, N. J.</i>
1888	<i>Baker, J. W.</i> . . . .	<i>Del. Lackawanna &amp; Western</i> . . . .		<i>Dover, N. J.</i>
1885	<i>Ballentine, D. W.</i> . . .	<i>Seaboard &amp; Roanoke</i> . . . . .	500	<i>Portsmouth, Va.</i>
1884	<i>Barr, J. N.</i> . . . . .	<i>Chic. Milwaukee &amp; St. Paul</i> . . . .	28,236	<i>Milwaukee, Wis.</i>
1883	<i>Barber, J. C.</i> . . . .	<i>Northern Pacific</i> . . . . .	18,301	<i>St. Paul, Minn.</i>
1891	<i>BARNES, D. L.</i> . . . .	<i>THE RAILROAD GAZETTE</i> . . . . .		<i>704, ROOKERY BLDG. CHICAGO, ILL.</i>
1890	<i>Bean, John</i> . . . . .	<i>Cleveland &amp; Canton</i> . . . . .	1,436	<i>Canton, O.</i>
1890	<i>Biester, Rudolph</i> . . .	<i>Swift's Refrigerator Co</i> . . . . .		<i>5327 Wentworth Ave., Chicago, Ill.</i>
1881	<i>Bissell, T. A.</i> . . . .	<i>Wagner Palace Car Co.</i> . . . . .		<i>Buffalo, N. Y.</i>
1883	<i>Blackall, R. C.</i> . . . .	<i>Delaware &amp; Hud. Canal Co.</i> . . . .	16,626	<i>Albany, N. Y.</i>
1882	<i>Blackwell, Chas.</i> . . .	<i>Schoenberger &amp; Co.</i> . . . . .		<i>Pittsburgh, Pa.</i>
1880	<i>Blackwell, K. W.</i> . . .	<i>Manufacturer</i> . . . . .		<i>Canal &amp; Conde St., Montreal, Can.</i>
1887	<i>Boatman, F. P.</i> . . . .	<i>Clev., Cinn., Chgo. &amp; St. Louis</i> . . . .	18,871	<i>Indianapolis, Ind.</i>
1890	<i>Bossinger, H. C.</i> . . . .	<i>Chesapeake &amp; Ohio</i> . . . . .		<i>Huntington, W. Va.</i>
1890	<i>Bossinger, H. J.</i> . . .	<i>E. Tenn. Va. &amp; Georgia</i> . . . . .		<i>Knoxville, Tenn.</i>
1889	<i>Boutet, H.</i> . . . . .			<i>Ludlow, Ky.</i>
1885	<i>Bradley, Osgood</i> . . . .	<i>Bradley Car Works</i> . . . . .		<i>Worcester, Mass.</i>
1873	<i>Bray, F. O.</i> . . . . .	<i>Lake Shore &amp; Mich. South</i> . . . . .		<i>Adrian, Mich.</i>
1891	<i>Brimson, W. G.</i> . . . .	<i>The Calumet &amp; Blue Island, The Chicago &amp; Kenosha, Chicago &amp; South-Eastern, The Joliet &amp; Blue Island, Milwaukee, Bay View &amp; Chicago</i> . . . . .	465	<i>Chicago, Ill.</i>
1889	<i>Bronner, E. D.</i> . . . .	<i>Michigan Central</i> . . . . .	14,024	<i>Detroit, Mich.</i>
1891	<i>Bruce, Frank</i> . . . . .	<i>Chicago &amp; Eastern Ill.</i> . . . . .	8,109	<i>Danville, Ill.</i>
1891	<i>Brück, H. T.</i> . . . . .	<i>Cumberland &amp; Pennsylvania</i> . . . .	561	<i>Mt. Savage, Md.</i>
1882	<i>Bryan, H. S.</i> . . . . .			<i>St. Paul, Minn.</i>
1885	<i>Buchanan, Wm.</i> . . . .	<i>N. Y. Cent. &amp; Hud. River, N. Y. West Shore &amp; Buffalo &amp; Rome, Wat. &amp; Ogdensburg</i> . . . .	51,000	<i>Grand Central Depot New York City.</i>

## LIST OF MEMBERS.—Continued.

Date of becoming member.	NAME.	RAILROAD COMPANY.	No. OF CARS OWNED.	ADDRESS.
1883	Bushnell, R. W...	Bur. Cedar Rapids & Nor...	4,161	Cedar Rapids, Ia.
1887	Butler, C. J.....	Fall Brook Coal Co.....	3,797	Corning, N. Y.
1890	Butterfield, J. G...	Sioux City & Northern....	484	Sioux City, Iowa.
1886	Cade, J. R.....	Southern Pacific.....		Houston, Texas.
1890	Carlton, E. T.....	Baltimore & Ohio.....		Newark, Ohio.
1883	Carlton, Howard..	South Baltimore Car Works.		Baltimore, Md.
1889	Carr, W. K.....	Norfolk & Western.....		Roanoke, Va.
1890	Carson, M. T.....	Mobile & Ohio.....	2,700	Jackson, Tenn.
1890	Carver, E. E.....	Iowa Central.....	1,802	Marshalltown, Ia.
1888	Casanave, F. D...	Pennsylvania Co.....	33,249	Fort Wayne, Ind.
1887	Casey, J. J.....	Louis. New Orleans & Texas		Vicksburg, Miss.
1883	Cassady, Thos....	Cin. Ind. St. Louis & Chic..		Cleves, Ohio.
1884	Chamberlain, E...	N. Y. Cent. & Hudson River		East Buffalo, N. Y.
1883	Chamberlain, J. T.	Boston & Maine.....	9,214	Lawrence, Mass.
1889	Charpiot, S. A....	Cent. R. R. & Banking Co. of Georgia.....		Macon, Ga.
1891	Chase, R. G.....	Chic. Boston & Liverpool Co.		Elsdon, Ill.
1890	Clark, Isaac W....	Cape Fear & Yadkin Valley.		Fayetteville, N. C.
1886	Coghlan, John...	Boston, R. B. & Lynn.....		Winthrop Junction, E. Boston, Mass.
1890	Coller, Charles...	Louis. New Albany & Chic..	4,525	New Albany, Ind.
1889	Connolly, J. J....	Dul. S. So. & Atlantic.....	3,755	Marquette, Mich.
1887	Cook, John S.....	Georgia and G. J. & S.....	1,058	Augusta, Ga.
1887	Cormack, Wm.....	Wisconsin Central.....	5,000	Stevens Point, Wis.
1888	Cory, Chas. H....	Cincinnati, Hamilton & Day- ton.....	5,600	Lima, Ohio.
1891	Coulter, H.....	Phil. Wil. & Balto.....		Philadelphia, Pa.
1886	Cowan, Jno.....	Allegheny Valley.....		Verona, Pa.
1887	Cox, Lewis J.....	Terre Haute Car & Mfg. Co.		Terre Haute, Ind.
1887	Cromwell, A. J...	Balto. & Ohio.....		Baltimore, Md.
1891	Crone, S. A.....	N. Y. C. & H. R. R. R.....		G. C. Sta., New York.
1891	Cullen, Jas.....	Nashville, Chatt. & St. Louis	3,762	Nashville, Tenn.
1889	Davenport, C. W..	Erie Car Works, Limited...		Erie, Pa.
1886	Davis, Jas. A....	Napanee, Tam. & Quebec...		Deseronto, Ontario.
1887	Davis, Jno. H....	Wilmington & Weldon.....		Wilmington, N. C.
1888	Davison, Geo. I...	Pitts. Chartiers & Yough...	280	McKee's Rocks, Pa.
1885	Day, W. H.....	Wilmington, Columbia & Augusta.....		Florence, S. C.
1868	Demarest, G. W..	Northern Central.....		Baltimore, Md.
1873	Denver, James...	N. Y., New Haven & Hart- ford.....		New Haven, Conn.
1888	Dickerman, C. H.	Milton Car Works.....		Milton, Pa.
1881	Divine, Jno. F....	Wil. & Wel., Wil., Col. & Aug. and N. E. of S. C....		Wilmington, N. C.
1888	Dolbeer, A.....	Buffalo, Rochester & Pitts...	5,047	Rochester, N. Y.
1878	Donaby, R.....	N. Y. Cent. & Hudson Riv..		Niagara Falls, N. Y.
1882	Doran, J. E.....	Boston & Albany.....		E. Albany, N. Y.

## LIST OF MEMBERS.—Continued.

Date of becoming member.	NAME.	RAILROAD COMPANY.	No. OF CARS OWNED.	ADDRESS.
1891	Downing, T. ....	Elgin, Joliet & Eastern. ....		Joliet, Ill.
1886	Dryden, C. P. ....	Union Tank Line. ....		Cleveland, O.
1890	Dunbar, O. P. ....	Wheeling & Lake Erie. ....	3,400	Norwalk, O.
1883	Duncan, T. G. ....	Cin., Washington & Balto. ....		Zaleski, O.
1886	Ennis, W. C. ....	N. Y., Susquehanna & Western. ....	2,545	Wortendyke, N. J.
1883	Ensign, S. P. ....	Ensign Manufacturing Co. ....		Lime Rock, Conn.
1886	Ettenger, G. W. ....	Iron Car Equipment Co. ....		41 Wall St., New York City.
1888	Evans, J. ....	Oregon Ry. & Nav. Co. ....	2,367	The Dalles, Oregon.
1884	Finlay, L. ....			902 W. 4th St., Little Rock, Ark.
1886	Flahavan, W. M. ....			Allegheny City, Pa.
1877	Fletcher, Jno. B. ....	National Car Co. ....		St. Albans, Vt.
1873	FORNEY, M. N. ....	RAILROAD & ENGINEERING JOURNAL. ....		17 E. 38TH ST., NEW YORK CITY.
1882	Forsyth, Wm. ....	Chi., Bur. & Quincy. ....	19,957	Aurora, Ill.
1886	Foster, Wm. A. ....	Fall Brook Coal Co. ....		Corning, N. Y.
1887	Fraser, Thomas A. ....	Wells & French Co. ....		Phenix Bldg., Chicago, Ill.
1890	Gage, Geo. F. ....	Hunt. & Broad Top. ....	1,465	Huntington, Pa.
1885	Galloway, A. ....	Tol., Ann Arbor & N. Mich. ....		Owosso, Mich.
1890	Gardiner, F. J. ....	Swift & Co. ....		Kansas City, Mo.
1890	Garrett, M. A. ....	A. A. Refr. Car Co. ....		Chicago, Ill.
1888	Garstang, Wm. ....	Chesapeake & Ohio. ....	11,500	Richmond, Va.
1883	Gause, J. Taylor. ....	Harlan & Hollingsworth Co. ....		Wilmington, Del.
1884	Geffcken, E. ....	Savannah, Fla. & Western. ....		Savannah, Ga.
1891	Gibbs, A. W. ....	Cent. R. R. & B. Co. of Ga. ....	6,318	Savannah, Ga.
1890	Gibbs, Geo. ....	Chi., Milwaukee & St. Paul. ....		Milwaukee, Wis.
1891	Glover, J. B., Jr. ....	Marietta & Nor. Ga. ....		Marietta, Ga.
1887	Glover, Frederick. ....	Cape Girardeau & Southwest-ern. ....	117	Cape Girardeau, Mo.
1887	Gore, C. E. ....			Indianapolis, Ind.
1873	Graham, Chas. ....	Del. Lackawanna & Western. ....		Kingston, Pa.
1883	Gramling, G. H. ....	South Carolina. ....		Charleston, S. C.
1889	Greatsinger, J. L. ....	Duluth & Iron Range. ....	1,133	Two Harbors, Minn.
1885	Grieves, E. W. ....	Baltimore & Ohio. ....	28,000	Baltimore, Md.
1886	Griffith, Fred B. ....	Del., Lackawanna & Western. ....		Buffalo, N. Y.
1889	Griggs, A. ....	Providence & Worcester. ....		Providence, R. I.
1889	Groves, J. R. ....	St. Louis & San Francisco. ....	5,320	Springfield, Mo.
1870	Hackett, Geo. ....	Philadelphia & Reading. ....		Elizabeth, N. J.
1882	Hackney, Clem. ....			1719 Grand Ave., Milwaukee, Wis.
1882	Hackney, Geo. ....			Chicago, Ill.
1890	Harding, B. R. ....	Raleigh & Gaston. ....	995	Raleigh, N. C.
1886	Harris, Geo. H. ....	Pitts., Cin., Chi. & St. Louis. ....		Columbus, O.



## LIST OF MEMBERS.—Continued.

Date of becoming member.	NAME.	RAILROAD COMPANY.	NO. OF CARS OWNED.	ADDRESS.
1887	Harrison, W. H.	Baltimore & Ohio.....	.....	Newark, O.
1891	Hatswell, J. T. ....	Flint & Pere Marquette....	3,400	E. Saginaw, Mich.
1889	Hawthornth, D. ....	Bur. & Missouri River.....	7,311	Plattsmouth, Neb.
1891	Hayes, R. T. ....	Memphis & Charleston.....	.....	Memphis, Tenn.
1883	Hecker, Frank J. ....	Peninsular Car Works.....	.....	Detroit, Mich.
1884	Hegewisch, A. ....	U. S. Rolling Stock Co.....	.....	35 Wall St., New York.
1891	Hemphill, W. J. ....	Chicago, Peoria & St. Louis.	1,231	Jacksonville, Ill.
1890	Hennessey, J. J. ....	Chic. Milwaukee & St. Paul	.....	West Milwaukee, Wis.
1889	Henney, J. B. ....	New York & New England..	.....	Boston, Mass.
1889	Henry, J. J. ....	Cleveland, Akron & Col. ...	1,403	Mt. Vernon, O.
1888	Higginson, John ....	Canadian Pacific.....	13,000	Montreal, Can.
1873	Hildrup, W. T. ....	Harrisburg Car Co.....	.....	Harrisburg, Pa.
1884	Hitchcock, Robert...	Connecticut River.....	598	Springfield, Mass.
1879	Hodge, John.....	.....	.....	Topeka, Kansas.
1890	Hoffecker, W. L. ....	Central of New Jersey.....	22,750	Elizabethport, N. J.
1890	Holt, J. M. ....	Richmond & Danville.....	.....	Manchester, Va.
1889	Howard, C. H. ....	Missouri Pacific.....	.....	St. Louis, Mo.
1889	Hughes, E. W. M. ....	Fox Solid Pressed Steel Co..	.....	1004 Rookery, Chicago, Ill.
1883	Huidekoper, H. S. ....	The Western Car Co.....	.....	2020 Spruce St., Phila.
1891	Humphrey, A. L. ....	Colorado Midland.....	1,315	Colorado Springs, Colo.
1884	Hunter, David W. ....	New York & New England..	.....	Norwood, Mass.
1887	Hurlbut, Francis B. ....	Mer. Water. & Conn. River.	.....	Meriden, Conn.
1883	Irvin, Samuel. ....	.....	.....	3000 Locust Street, St. Louis, Mo.
1887	Jackson, A. A. ....	New York & New England.	4,600	Boston, Mass.
1882	Jackson, Job H. ....	Jackson & Sharp Co.....	.....	Wilmington, Del.
1887	Johann, Jacob ....	.....	.....	103 South 7th St., Springfield, Ill.
1882	Johnson, F. ....	Buffalo Car Mfg. Co.....	.....	Buffalo, N. Y.
1883	Keeler, Sanford.....	.....	.....	East Saginaw, Mich.
1883	Keith, Isaac.....	Keith Mfg. Co.....	.....	Sagamore, Mass.
1889	Kells, Ross.....	N. Y., Lake Erie & Western	44,638	21 Cortlandt St., New York City.
1882	Kenison, Chas. H. ....	Maine Central.....	2,983	Augusta, Me.
1883	Kirby, John.....	Lake Shore & Mich. Southern	19,574	Cleveland, O.
1887	Kittredge, A. M. ....	Barney & Smith Mfg. Co....	.....	Dayton, O.
1890	Kneeland, L. D. ....	Street's Western Stable Car Line.....	.....	Chicago, Ill.
1884	Lauder, James N. ....	Old Colony.....	3,533	Boston, Mass.
1889	Leeds, Pulaski....	Louisville & Nashville.....	16,352	Louisville, Ky.
1872	Leighton, Jas. T. ....	Cons. Car Heating Co.....	.....	15 Cortlandt St., New York City.
1879	Lentz, John S. ....	Lehigh Valley.....	.....	Packerton, Pa.
1887	Leonard, C. M. ....	Chicago, R. I. & Pacific....	.....	Davenport, Ia.
1867	Levan, J. P. ....	Pennsylvania.....	.....	Altoona, Pa.
1889	Lewis, W. H. ....	Chicago, Bur. & Northern..	3,407	La Crosse, Wis.

## LIST OF MEMBERS.—Continued.

Date of becoming member.	NAME.	RAILROAD COMPANY.	NO. OF CARS OWNED.	ADDRESS.
1871	Lightner, J. ....	Boston & Providence. ....	.....	Boston, Mass.
1890	Lilley, Geo. W. ...	Canda Cattle Car Co. ....	.....	205 La Salle St., Chicago, Ill.
1890	Lindsay, Thos. ...	Baltimore & Ohio. ....	.....	Pittsburgh, Pa.
1891	Lungen, W. H. ...	Phila. Wil. & Balto. ....	.....	Wilmington, Del.
1891	McAlpine, A. R. ...	Indiana Car & Fdy. Co. ....	.....	Indianapolis, Ind.
1882	McCarty, H. C. ...	Philadelphia & Erie. ....	.....	Williamsport, Pa.
1891	McConnell, J. H. ...	Union Pacific. ....	25,182	Omaha, Neb.
1882	McCrum, J. S. ...	K. C., Ft. Scott & Memphis. ....	8,514	Kansas City, Mo.
1882	McGee, James. ...	Houston & Texas Central. ...	2,645	Houston, Tex.
1880	McGregor, James. ...	Michigan Car Co. ....	.....	Detroit, Mich.
1882	McIlwain, J. D. ...	Grand Trunk. ....	.....	London, Ontario.
1883	McKenna, Robert. ...	Del., Lackawanna & Western. ...	30,700	Scranton, Pa.
1875	McWood, Wm. ...	Grand Trunk. ....	.....	Montreal, Can.
1889	Macbeth, James. ...	Adirondack & St. Lawrence. ....	.....	Herkimer, N. Y.
1883	Mackenzie, John. ...	N. Y. Chicago & St. Louis. ...	7,000	Cleveland, O.
1890	Maglenn, James. ...	Carolina Central. ....	.....	Laurinsburg, N. C.
1882	Marden, J. W. ...	Fitchburg. ....	6,559	Boston, Mass.
1890	Marshall, E. S. ...	St. L. Arkansas & Texas. ...	4,105	Pine Bluff, Ark.
1890	Marshall, R. E. ...	Phila., Wilmington & Balto. ....	.....	Philadelphia, Pa.
1886	Martin, M. M. ...	Wabash. ....	13,607	Decatur, Ill.
1887	Meehan, James. ...	Cin., New Orleans & Texas Pac. ....	10,300	Ludlow, Ky.
1891	Michael, J. B. ...	East Tenn., Vir. & Ga. ....	.....	Knoxville, Tenn.
1891	Middagh, D. B. ...	Norfolk & Western. ....	.....	Roanoke, Va.
1867	Mileham, J. N. ...	.....	.....	Rutherford, Bergen Co., N. Y.
1886	Millen, Thos. ....	New York & Northern. ....	.....	High Bridge, New York City.
1884	Miller, G. W. ....	.....	.....	Buffalo, N. Y.
1877	Miller, Robt. ....	Michigan Central. ....	.....	Detroit, Mich.
1891	Miller, W. H. ....	Col., Hocking Valley & Toledo. ....	.....	Columbus, Ohio.
1891	Mills, Stott. ....	Lehigh & Hudson. ....	.....	Warwick, N. Y.
1889	Minton, W. D. ....	Texas & Pacific. ....	.....	Marshall, Tex.
1889	Morris, W. S. ....	Det., Lansing & Northern, S. V. & St. L. and Chi. & West Michigan. ....	5,190	Grand Rapids, Mich.
1891	Morse, W. M. ....	Tol. & Ohio Central Ext. ...	60	Marietta, Ohio.
1888	NEALE, D. H. ....	CARE RY. COMMISSIONERS. ...	.....	SIDNEY, N. S. W.
1885	Nelson, E. D. ....	P. & E. Div., Pennsylvania. ....	.....	Williamsport, Pa.
1888	O'Brien, Jno. H. ...	Mexican Central. ....	.....	City of Mexico, Mex.
1877	Ortton, John. ....	Tol., St. Louis & Kansas City. ....	.....	Delphos, O.
1881	Packard, L. ....	New York Central & Hudson River. ....	.....	West Albany, N. Y.
1890	Pattee, Jos. O. ....	Great Northern. ....	8,527	St. Paul, Minn.
1887	Patterson, Jno. S. ...	.....	.....	Cincinnati, O.

## LIST OF MEMBERS.—Continued.

Date of becoming member.	NAME.	RAILROAD COMPANY.	NO. OF CARS OWNED.	ADDRESS.
1889	Paxson, L. B. ....	Philadelphia & Reading.....	28,980	Reading, Pa.
1889	Payne, G. C. ....	Buffalo, Rochester & Pitts... ..		Buffalo, N. Y.
1889	Peck, Peter H. ....	Chi & West'n Ind. and Belt..	145	83rd Street, Chicago, Ill.
1890	Player, Jno. ....	Atch., Topeka & Santa Fe... ..	24,681	Topeka, Kan.
1890	Porcher, Sam'l. ....	Pennsylvania.....		Jersey City, N. J.
1885	Preston, H. L. ....	Chi., St. P., Minn. & Omaha	8,107	Hudson, Wis.
1891	PROUT, H. C. ....	THE RAILROAD GAZETTE.....		73 BROADWAY, NEW YORK.
1891	Pullman, C. L. ....	Pullman Palace Car Co. ....		Chicago, Ill.
1891	Quayle, Robt. ....	Mil., Lake Shore & West... ..	5,088	Milwaukee, Wis.
1888	Rankin, Jno. H. ....	Philadelphia & Reading.....		Reading, Pa.
1879	RAYMOND, J. H. ....			225 DEARBORN ST., CHICAGO, ILL.
1891	Reed, A. J. ....	Cornwall & Lebanon.....	525	Lebanon, Pa.
1891	Reiley, Bernard... ..	Mason City & Ft. Dodge ...	130	Mason City, Iowa.
1883	Reilly, Patrick... ..	Lake Erie & Western.....		Lima, O.
1890	Reniff, J. R. ....	Flint & Pere Marquette.....		E. Saginaw, Mich.
1885	Rhodes, Godfrey W.	St. L., Keokuk & N.-W., Chi., Bur. & K. C., Han. & St. Joe, K. C., St. Joe & Council Bluffs, Chicago & Iowa.....	3,547	Aurora, Ill.
1882	Richardson, E. ....	Shenango & Allegheny.....	525	Greenville, Mercer Co., Pa.
1883	Richardson, John..	Cincinnati Southern.....		Ladlow, Ky.
1886	Rigby, S. S. ....	Cincinnati, Jackson & Mackinaw.....		Van Wert, Ohio.
1885	Roberts, H. ....	Chicago & Grand Trunk and Det., Gr. Haven & Mil... ..	4,558	Detroit, Mich.
1886	Robertson, W. J. ...	Central Vermont.....	7,743	St. Albans, Vt.
1873	Robson, A. C. ....	Lake Shore & Mich. South'n		Buffalo, N. Y.
1891	Rogers, M. J. ....	Florida Central & Penn.....	1,000	Fernandina, Fla.
1882	Rommel, Geo. ....	Wilmington & Northern ...	328	Coatesville, Pa.
1886	Rutherford, Wm. ...	Jacks'lle, Tampa & Key West	521	Jacksonville, Fla.
1891	Ryan, J. J. ....	Southern Pacific Co. ....		Houston, Tex.
1888	Ryder, Henry.....	Housatonic.....	1,452	Bridgeport, Conn.
1883	Salveter, T. C. ....			St. Louis, Mo.
1889	Sample, N. W. ....	Denver & Rio Grande.....	7,222	Denver, Colo.
1885	Schlacks, Henry ..	Ill. Central.....		Chicago, Ill.
1887	Schroyer, Chas. A.	Chicago & Northwestern.....	26,200	Chicago, Ill.
1890	SETCHEL, J. H. ....	PITTS. LOCOMOTIVE WORKS..		PITTSBURGH, PA.
1891	Sheer, J. M. ....	Ohio & Mississippi.....	3,730	Washington, Ind.
1890	Sheerer, E. P. ....	Des Moines & Northern.....	43	Des Moines, Ia.
1889	Siddons, W. P. ....	International & Gt. Northern	2,193	Palestine, Tex.
1889	Silvius, E. T. ....	Jacksonville, St. Augustine & Halifax River.....	120	St. Augustine, Fla.
1891	Simons, J. E. ....	Pittsburgh & Lake Erie.....		Chartiers, Pa.

LIST OF MEMBERS.—*Continued.*

Date of becoming member.	NAME.	RAILROAD COMPANY.	NO. OF CARS OWNED.	ADDRESS.
1889	SINCLAIR, ANGUS..	NATIONAL CAR BUILDER.....		140 NASSAU ST., NEW YORK CITY.
1884	Skinner, J. R.....	Del. & Hudson Canal Co....		Oneonta, N. Y.
1890	Small, H. J.....	Southern Pacific.....		Sacramento, Cal.
1870	Smith, C. A.....	Union Tank Line.....		26 Broadway, New York City.
1888	Smith, Frank C...	Peoria, Decatur & Evansville.....		Mattoon, Ill.
1880	Smith, Peter.....	N. Y. Cent. & Hudson River.....		E. Rochester, N. Y.
1889	Smith, W. T.....	Newport News & Miss. Val. ....	1,030	Lexington, Ky.
1890	Smyser, L. B.....	Litchfield Car Co.....		Litchfield, Ill.
1882	Snow, W. B.....	Illinois Central.....	16,128	Chicago, Ill.
1891	Soule, R. H.....	Norfolk & Western.....	12,000	Roanoke, Va.
1891	Stanton, C. H.....	Penna., Pough. & Boston... ..	641	Goshen, N. Y.
1883	Steinbrenner, A. G.	Am. Refrig. Transit Co.....		Barton & Main Sts., St. Louis, Mo.
1873	Stewart, T. B....	Hartford & Wether. H. R. R. ....		Hartford, Conn.
1886	Stinard, F. A.....	.....		8 Dickinson St., Pater-son, N. J.
1889	Stoddard, B. C...	N. Y. Lake Erie & Western.....		Susquehanna, Pa.
1886	Stone, W. A.....	.....		Selma, Ala.
1886	Sutherland, T....	C. & G. T. and D. G. H. & M. ....		Fort Gratiot, Mich.
1891	Sullivan, J. J.....	Louisville Southern.....		Harrodsburg, Ky.
1879	Sweeney, John....	New Haven & Northampton.....		New Haven, Conn.
1880	Taylor, Joseph....	Michigan Car Co.....		Detroit, Mich.
1882	Taylor, G. M.....	.....		Mt. Vernon, O.
1888	Thomas, W. H.....	E. Tenn., Va. & Ga.....	10,523	Knoxville, Tenn.
1882	Townsend, Joseph.	Chicago & Alton.....	7,698	Bloomington, Ill.
1882	Trainham, W. H..	Rich., Fred. & Potomac.....	157	Richmond, Va.
1889	Turner, L. H.....	Pittsburgh & Lake Erie.....	5,235	Pittsburgh, Pa.
1883	Turreff, Wm.....	N. Y., Lake Erie & Western.....		Cleveland, O.
1890	Tyrrell, Thos.....	Stat. Island Rapid Transit..	80	Foot Whitehall St., New York City.
1883	Vail, Allen.....	Western N. Y. & Penn.....	8,888	Buffalo, N. Y.
1882	Van Buskirk, W. G.	Terre Haute & Peoria.....		Paris, Ill.
1883	Voorhees, John....	.....		Indianapolis, Ind.
1889	Voss, Wm.....	Bur., Cedar Rapids & Nor.....		Cedar Rapids, Ia.
1885	Wade, R. D.....	Richmond & Danville.....	10,225	Atlanta, Ga.
1885	Wagner, J. L.....	Erie & Pacific Despatch.....		Terre Haute, Ind.
1890	Waitt, A. M.....	Lake Shore & Mich. South.....		Cleveland, O.
1890	Walker, C. W.....	Seaboard & Roanoke.....		Portsmouth, Va.
1889	Walker, Robert...	Missouri, Kansas & Texas.....		Sedalia, Mo.
1882	Wall, E. B.....	Pitts., Cincin., Chi. & S. L..	11,675	Columbus, O.
1885	Wallis, J. M.....	Pennsylvania.....	67,824	Altoona, Pa.
1884	Wallis, Herbert....	Grand Trunk.....	21,105	Montreal, Canada.
1887	Ward, Chas. F....	Gulf, Colorado & Santa Fé.....		Galveston, Tex.
1871	Webster, H. A.....	Manhattan Elevated.....		71 Broadway, New York City.

LIST OF MEMBERS.—*Continued.*

Date of becoming member.	NAME.	RAILROAD COMPANY.	NO. OF CARS OWNED.	ADDRESS.
1887	Welch, Benjamin...	So. Pac. (Pacific System)....	13,000	Sacramento, Cal.
1890	West, Geo. W. ....	N. Y., Ontario & Western..	4,755	Middletown, N. Y.
1886	White, David.....	Intercolonial of Canada....	.....	Moncton, N. B.
1888	Whitehouse, A. T. ....	.....	.....	234 La Salle St., Chicago, Ill.
1885	Whitney, Henry A. ....	Intercolonial of Canada.....	6,435	Moncton, N. B.
1882	Wicke, Caspar.....	Cumberland Valley.....	772	Chambersburg, Pa.
1886	Wilbur, Rollin H. ....	Lehigh Valley.....	36,700	Bethlehem, Pa.
1891	Wilcox, W. J. ....	Charleston, Cin. & Chicago.	286	Blacksburg, S. C.
1885	Wilder, F. M. ....	.....	.....	Buffalo, N. Y.
1890	Williams, E. A. ....	M., St. P. & S. Ste. Marie.	3,876	Minneapolis, Minn.
1891	Wilson, G. F. ....	Chicago, R. I. & Pacific.....	14,733	Chicago, Ill.
1886	Winslow, J. M. ....	.....	.....	Tacoma, Wash.
1890	Wood, J. E. ....	Baltimore & Ohio.....	.....	Mt. Clare, Baltimore, Md.
1890	Wright, Nathan....	Zanesville & Ohio River....	163	Zanesville, O.
1888	Zehnder, C. H. ....	Jackson & Woodin Mfg. Co. ....	.....	Berwick, Pa.

Total number of cars..... 991,564.

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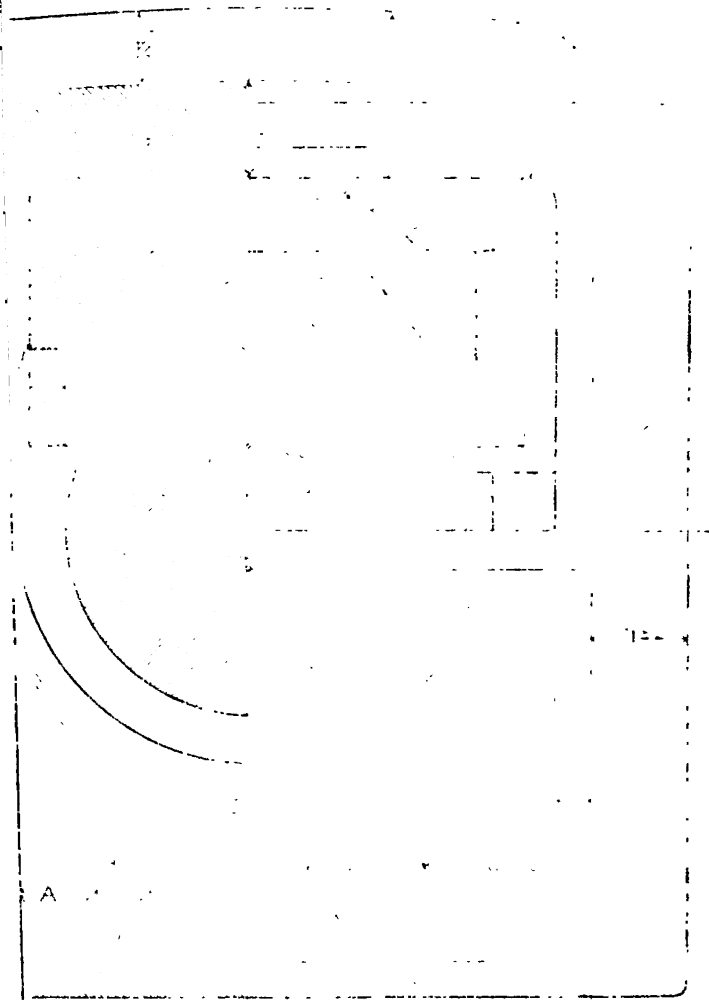






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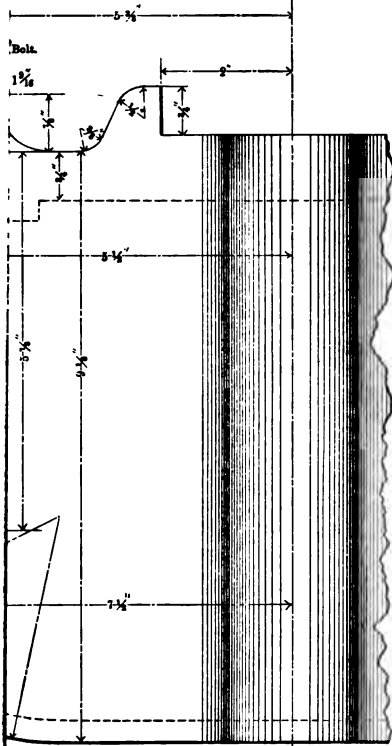
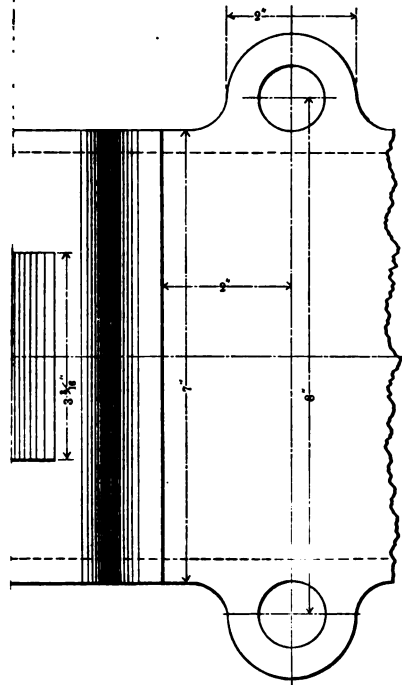


A

STANDARD



PLATE III B.



WILSON'S STANDARD LID AS  
JOURNAL BOX SHOWN  
PLATE III.

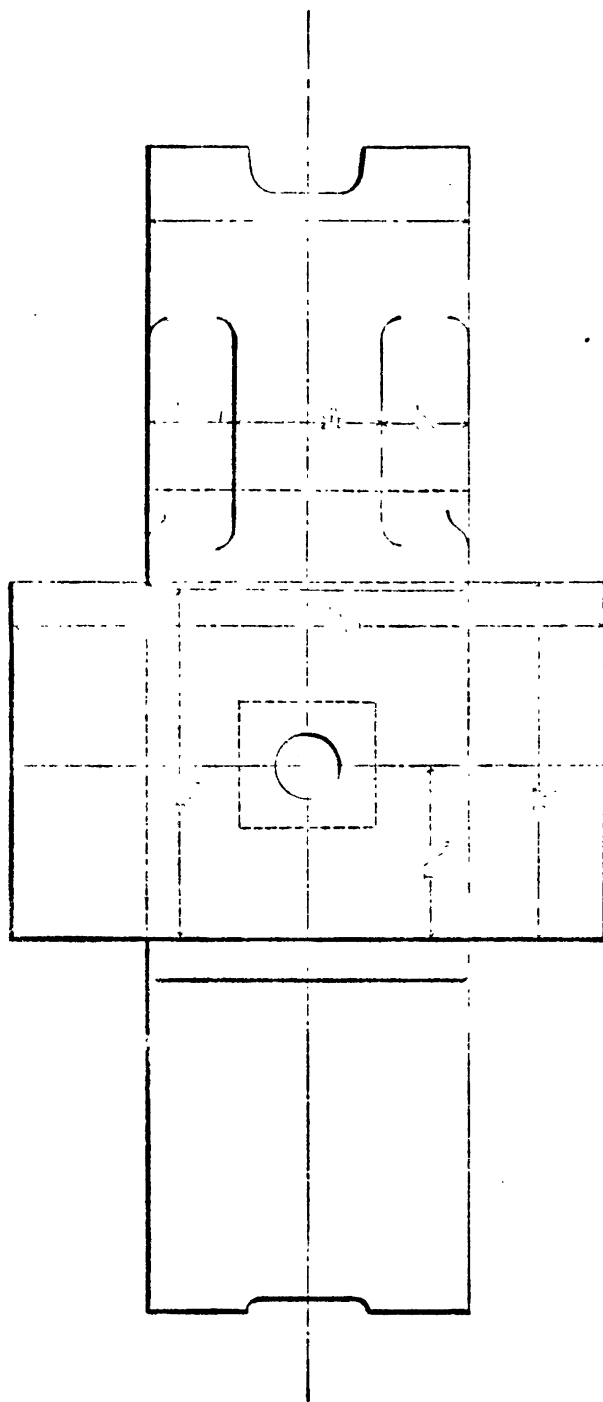
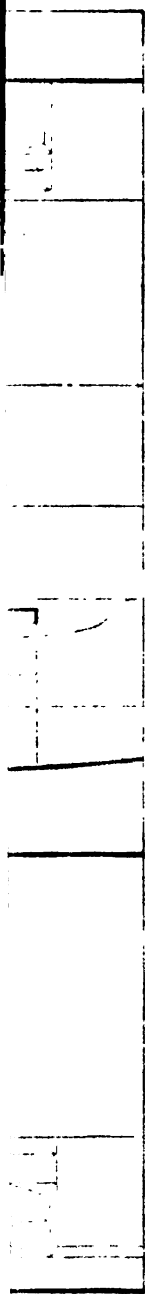
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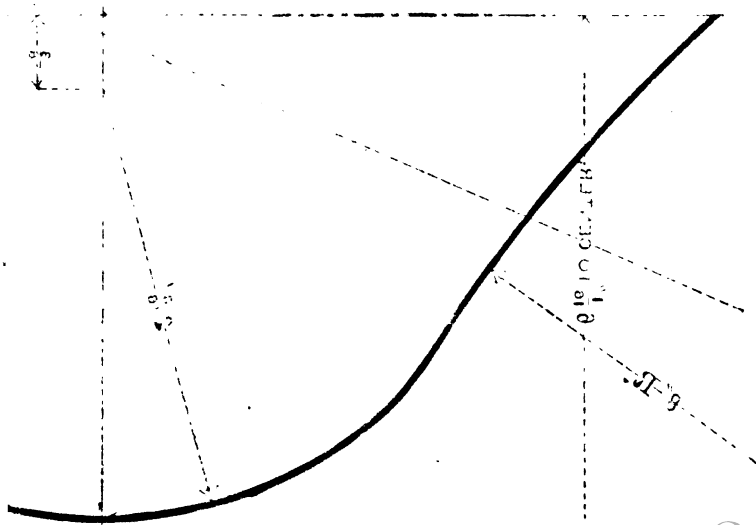
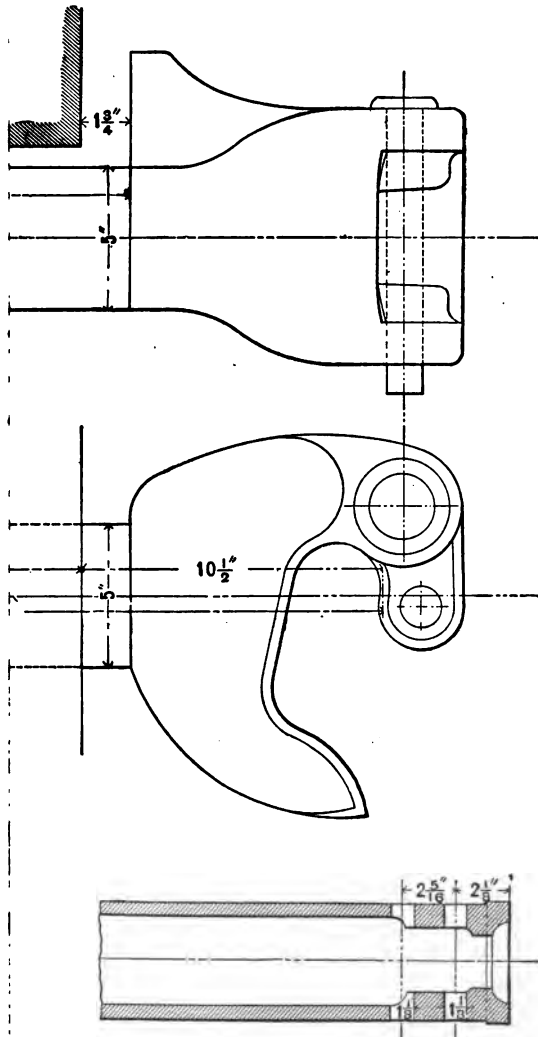




PLATE VII.



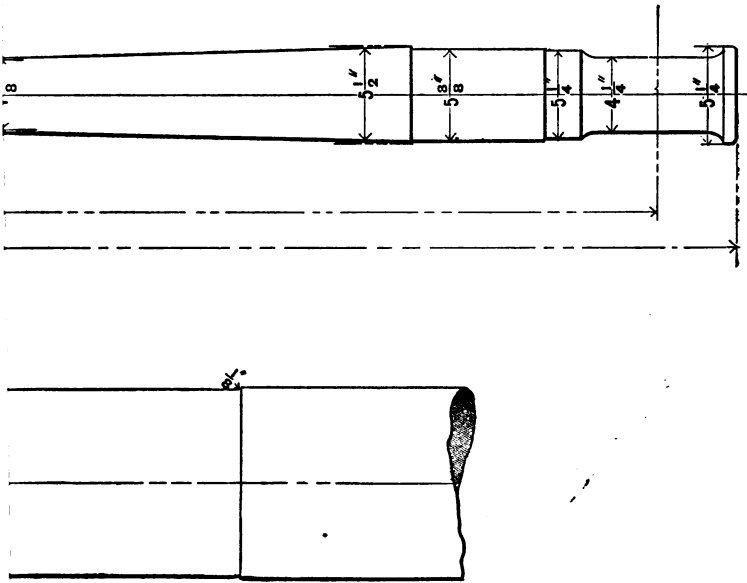
**RAILROAD AUTOMATIC COUPLER AND IRON.**

*Ballot, September, 1889.*





**PLATE VIII.**



**AXLE FOR 60,000 POUND CARS.**

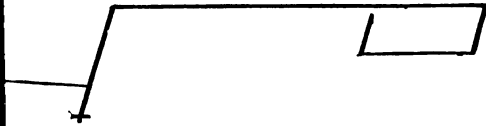
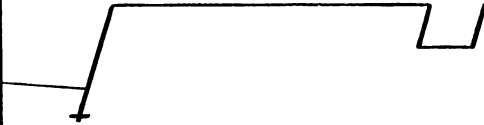
*at, September, 1889.*

E EN

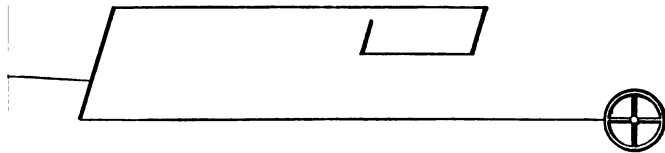
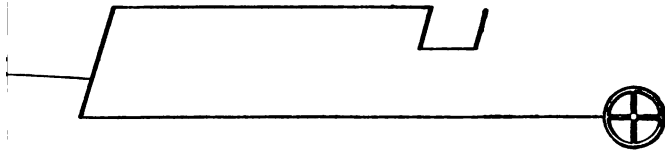
H

**PLATE IX.**

**THE END**



**THE ENDS**



**ARRANGEMENT OF BRAKE LEVERAGES ON  
AIR BRAKES.**

*wheel on left-hand side, by order of Executive Committee.*



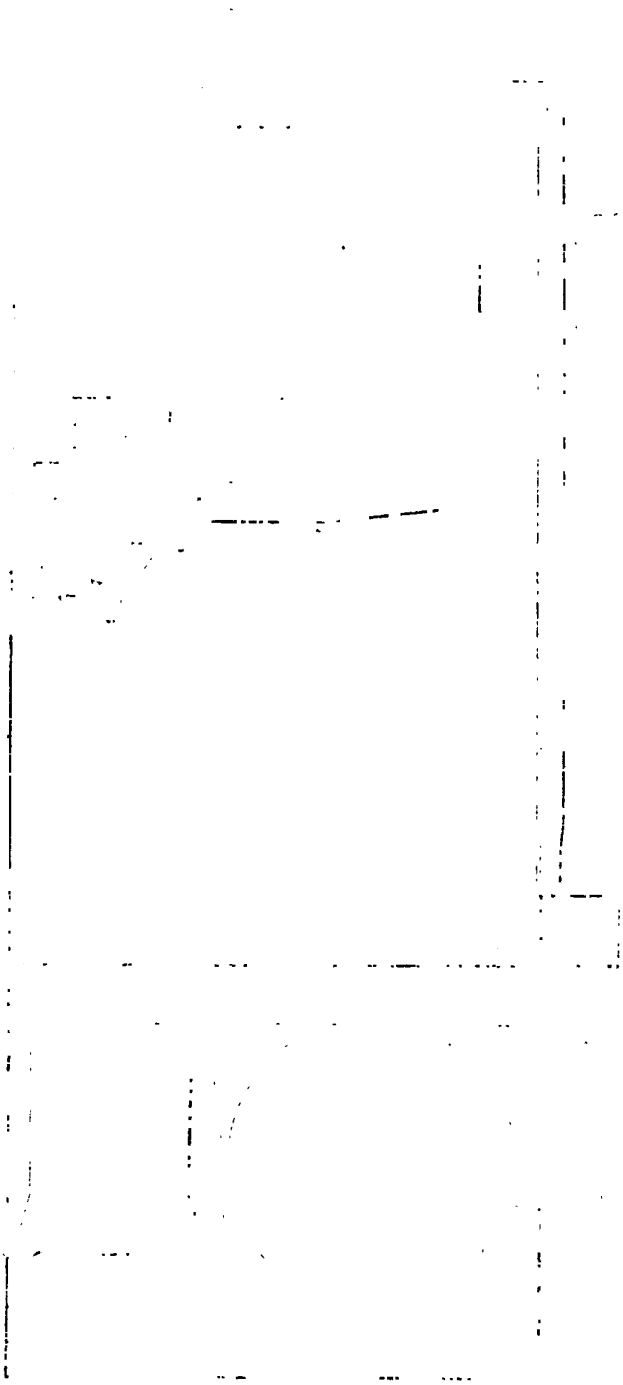
1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the company's finances and for ensuring that all parties involved are kept up to date on the current status of the business.

2. The second part of the paper deals with the various methods that can be used to collect and analyze data. It discusses the advantages and disadvantages of each method and provides a detailed explanation of how to choose the most appropriate one for a given situation. It also includes a list of references to further reading on this topic.

3. The third part of the paper focuses on the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the company's finances and for ensuring that all parties involved are kept up to date on the current status of the business.

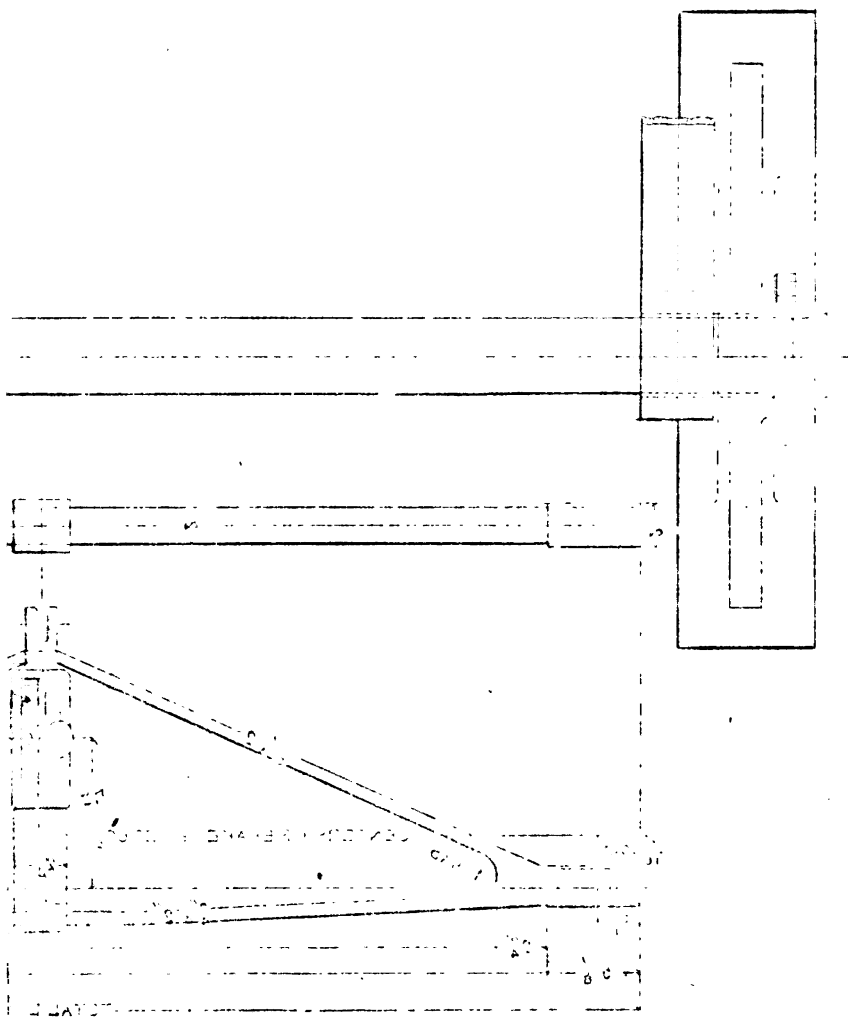
4. The fourth part of the paper discusses the various methods that can be used to collect and analyze data. It discusses the advantages and disadvantages of each method and provides a detailed explanation of how to choose the most appropriate one for a given situation. It also includes a list of references to further reading on this topic.











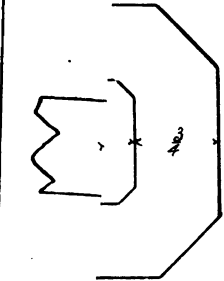
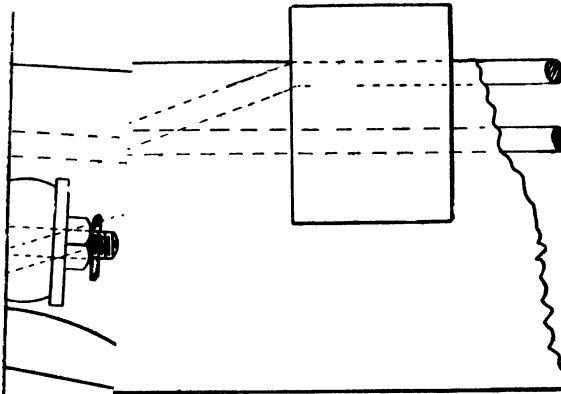
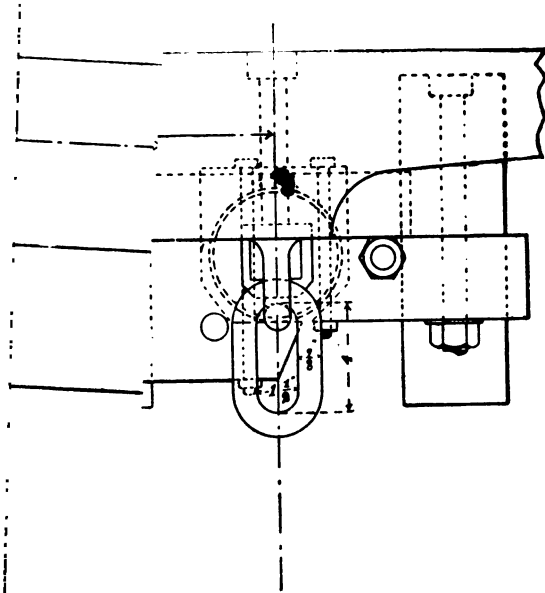
MASTER CAR-BUILDERS' STAND



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FOR THE YEAR 1900





LOCATANGEMENT OF SAFETY CHAINS  
GER E'S.

by Letter ).













No.	NAME	TAKE CARDS. OF	FLETCHER LID. RESCINDING STANDARD.		JOURNAL BOX, ETC., FOR 60,000-LB CARS.		OLD STANDARD JOURNAL BOX AND LID FOR SAME.	
			f		g		h	
		No	Yes	No	Yes	No	Yes	No
1	Geo. W.			5	5			5
2	W. H. I		4		4		4	
3	R. T. H		1		1		1	
4	W. H. T			11		11		11
5	John Ma			8				
6	M. M. M		14		14		14	
7	C. H. C		6		6		6	
8	Chas. C		5		5		5	
9	Herbert			22				22
10	John H.		1		1		1	
11	E. S. Ma	5		5		5		5
12	J. J. Con			4		4		4
13	Wm. Fo		20		20		20	
14	G. W R		4		4		4	
15	John S.		1		1		1	
16	J. R. Re			1		1		1
17	A. M. V		1		1		1	
18	John Ki		20		20		20	
19	D. W.			1		1		1
20	W. T. S		2		2		2	
21	Pulaski		17			17		17
22	Willis A		1			1		1
23	F. D. A			7		7		7
24	R. D. V		11			11		11
25	W. B. S			17		17		17
26	John L.		1			1		1
27	Benj. W			14				14
28	H. J. Sn			1				1
29	J. W. M			7		7		7
30	N. W. S			8		8		8
31	C. J. Bu			4		4		4
32	E. T. Si		1		1		1	
33	M. J. R		2					
34	C. A. S		27		27		27	
35	W. C. R		3		3		3	
36	R. H. V		37		37		37	
37	R. E. M		1		1		1	
38	W. J. V			1		1		1
39	W. P. S		3		3		3	
40	P. H. P							
41	J. C. B		19			19		
42	W. D. I			1		1		1
43	E. A. W		4			4		4
44	H. C. B			1		1		1
45	E. D. Br		15		15		15	
46	Jas. McC			3		3		3
47	E. B. W		12		12		12	
48	F. D. Ca		34		34		34	
49	J. M. W		68		68		68	
50	L. H. T		6		6		6	
51	W. Garst		12		12		12	
52	E. W. Gr		29		29		29	
53	R. H. S			13		13		13
54	Geo. F. V			15		15		15
55	R. McK	31	31		31		31	
56	E. T. Ca		1		1		1	
57	W. G. V		1		1		1	
58	F. G. Du		1		1		1	
59	H. C. M		1		1		1	
		36	417	149	365	176	378	159















